Help Desk System of International School Bangkok

by

Ms. Accharawan Wongsathithkul

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

Submitted in Partial Fulfillment
of the Requirements for the Degree of
Master of Science
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Project Title	Help Desk System of International School Bangkok
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Academic Year	August 4, 2001

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

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ABSTRACT

The aim of this project is to develop a computerized Help Desk System for the Education Technology Department of International School Bangkok (ISB). The existing help desk system at ISB is a manual system. Most data are stored on paper, and some data such as spare part inventory, asset inventory, loans records are kept on standalone computer using Microsoft Excel spreadsheet program. Job processing has to be done through lots of paper work, hence very time consuming. Sometimes jobs can get mixed up and cause great delay to help desk operations.

A computerized help desk system is proposed and implemented on an Intranet system using Web Browsing-style interface. All data are kept systematically on a database server using Microsoft SQL Server 7.0. The benefits obtained from implementing the new system at ISB are twofold. First, the proposed system helps to reduce the operating cost substantially, as shown by the cost analysis. Second, the proposed system is found to improve job satisfaction for help desk staffs as well as staffs of other departments.

ACKNOWLEDGEMENTS

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I. INTRODUCTION

1.1 Background of the Project

As a result of the demand for computer technology, everything at International School Bangkok (ISB) is expanding. The school needs more computers, and more staff with specialised computer skills. Whenever the school staffs have computer problems, they will contact the school technicians directly for the solutions. Last year the school hired one more person in a help desk role to help users with basic problems by telephone and e-mail, and pass more complicated problems to the technicians by request form. The work processes are basically 70% manual and the rest computerized. Of course there are a lot of human errors.

In our environment, help desk is a middle system which coordinates between technicians and end users (staff and students who have problems with school computers.) This service stores every problem request, and H/W inventory, on a database.

To achieve these requirements, the help desk system should serve as a tool to make the tasks more reliable and organized.

1.2 Objectives

(1) To implement a new computerized Help desk system to improve efficiency and effectiveness of the services for users and technicians.

(2) Reduce information loss by defining process clearly, and reduce the risks

(3) To encourage users to help themselves with a FAQ covering simple problems, created from the database.

(4) Management can use helpdesk information for budget planning.

(5) To use information in the database for identify training needs.

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1.3 Scope

(1)　Study and analyze the current system focusing on helpdesk section

(2)　Analyze the problems of current system

(3)　Develop and design the new system

(4)　Analyze the cost / benefit of new system

(5)　Implementation and documentation.

1.4 Deliverables

(1)　HelpDesk application (see more in Appendix G)

(2)　Printed output forms (see more in Appendix J)

(3)　Input forms and screen design for user-interface (see more in Appendix G)

(4)　FAQ (Figures G.6 – G.8 in Appendix G)

(5)　User manual (see more in Appendix G)

(6)　Source Code (see more in Appendix H)

1.5 Project plan

The Figure 1.1 has shown the detail of the proposed system schedule.

No.	Task Name	Jan				Feb				Mar				Apr			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
I.	Analysis of the Existing System																
1	Define the Objective and Scope																
2	Study the Existing System																
3	Identify the Existing Problems																
4	Study the Existing Computer System																
5	Develop Context Diagram																
6	Develop Data Flow Diagram																
7	Cost and Benefit Analysis																
II.	Analysis and Design of the Proposed System																
8	Web Interface Design																
9	Report Design																
10	Database Design																
11	Network Design																
12	Program Design																
III.	Implementation of the Proposed System																
13	Coding																
14	Testing																
15	Hardware Installation																
16	Software Installation																
17	Conversion & Testing																

Figure 1.1.   Project Plan.

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II. EXISTING SYSTEM

2.1 Background of the Organization

At present, there are about 1800 students and 500 staffs at International School Bangkok (ISB). Even through the school has to face the economic crisis, it is trying to improve quality for all, both students and staff. Technology is advancing very quickly especially computer technology which the school needs to keep pace with developments in the outside world. Although the school has good technology, the systems to administer the technology are not efficient. This project focuses on the 'help desk system' which is a part of 'Education Technology' or 'Ed-tech' department. A study will be conducted to determine how the current system works and whether a new system is needed.

A help desk operation starts with a user contacting the Help desk directly. Simple problems can be solved by the help desk person. If not, the help desk person will fill in the form and put it in the job tray for the technician to pick up later. If the problem is serious, the technician will request the help desk to contact a third party or supplier to fix the problem (for the case that the equipment is under warranty). During the process Help desk has to follow up the progress of problem solving on daily basis and enter details into the database manually.
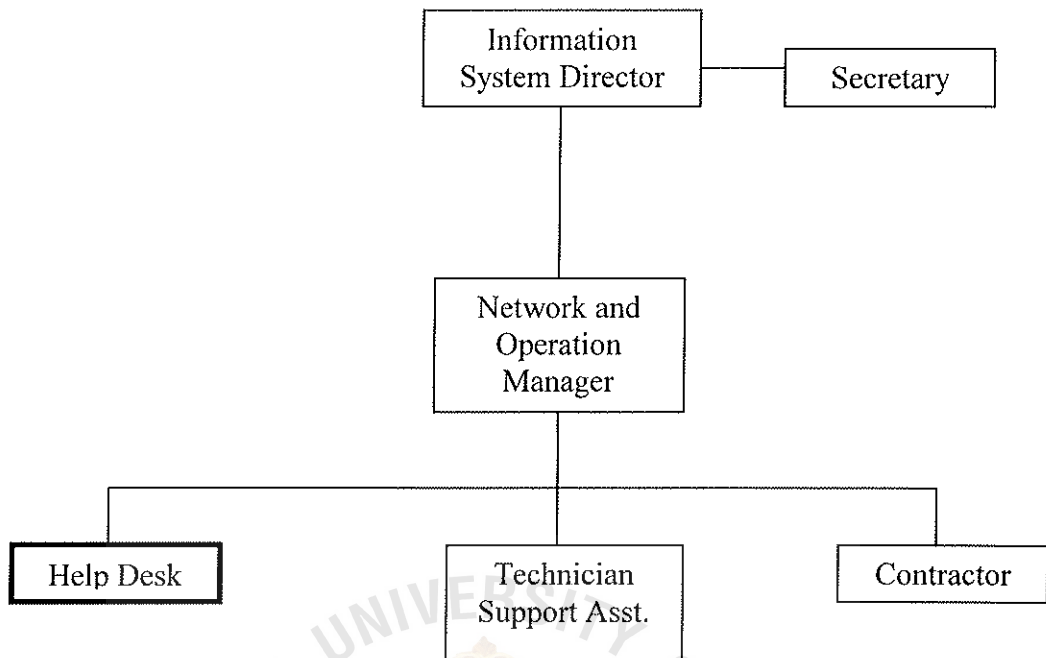
Figure 2.1. Organization Chart of Ed-Tech Department.

2.2 Existing 'Help Desk' Functions

In Figure 2.2, the Help Desk section is a part of Ed-Tech Department (or Ed-Tech). Help Desk is responsible for solving all basic computer problems either via phone or e-mail. Its functions can be summarized as follows:

(1) Provide solutions to simple computer problems requested by users

(2) Support technicians by managing and controlling H/W inventory and contacting suppliers when needed.

2.3 Current Problem and Areas for Improvements

At present, the number of computers and users are increasing. Also it is the maintenance time for the old machines. That is why nowadays there are more requests. It needs the system which can provides the good management, more reliable and more powerful. But with the system that is running today cannot afford the users demand. Here is the weak point in the current system.

(1)   Service issues: the user does not get what he expects from the help desk support. This includes problems with response time, resolution time, and professionalism of the support engineers.

(2)   Request are not closely followed up. Some problems may be left for 3 weeks without visible progress.

(3)   Heavy job loads only some technicians.

(4)   Database issue

    (a)   Lost information: All database input is done manually, a number of requests are missing.

    (b)   Information is difficult to find: It is very time consuming for help desk staff to trace the records of old job.

    (c)   Shortage and loss of inventory items.

    (d)   Double-handling: Information is often reported and recorded more than once.

    (e)   No computerized system or reliable and sufficient system to handle the data entry

(5)   Miscommunication: There is only 1 telephone line and 1 person to answer it. In some cases it takes a long time to solve a problem on telephone. Email is another option for communication channel. Its only problem is that users usually do not complete all of the required details.

2.4 Context Diagram of Existing System

This Figure 2.2 has shown the data flow of the existing system.

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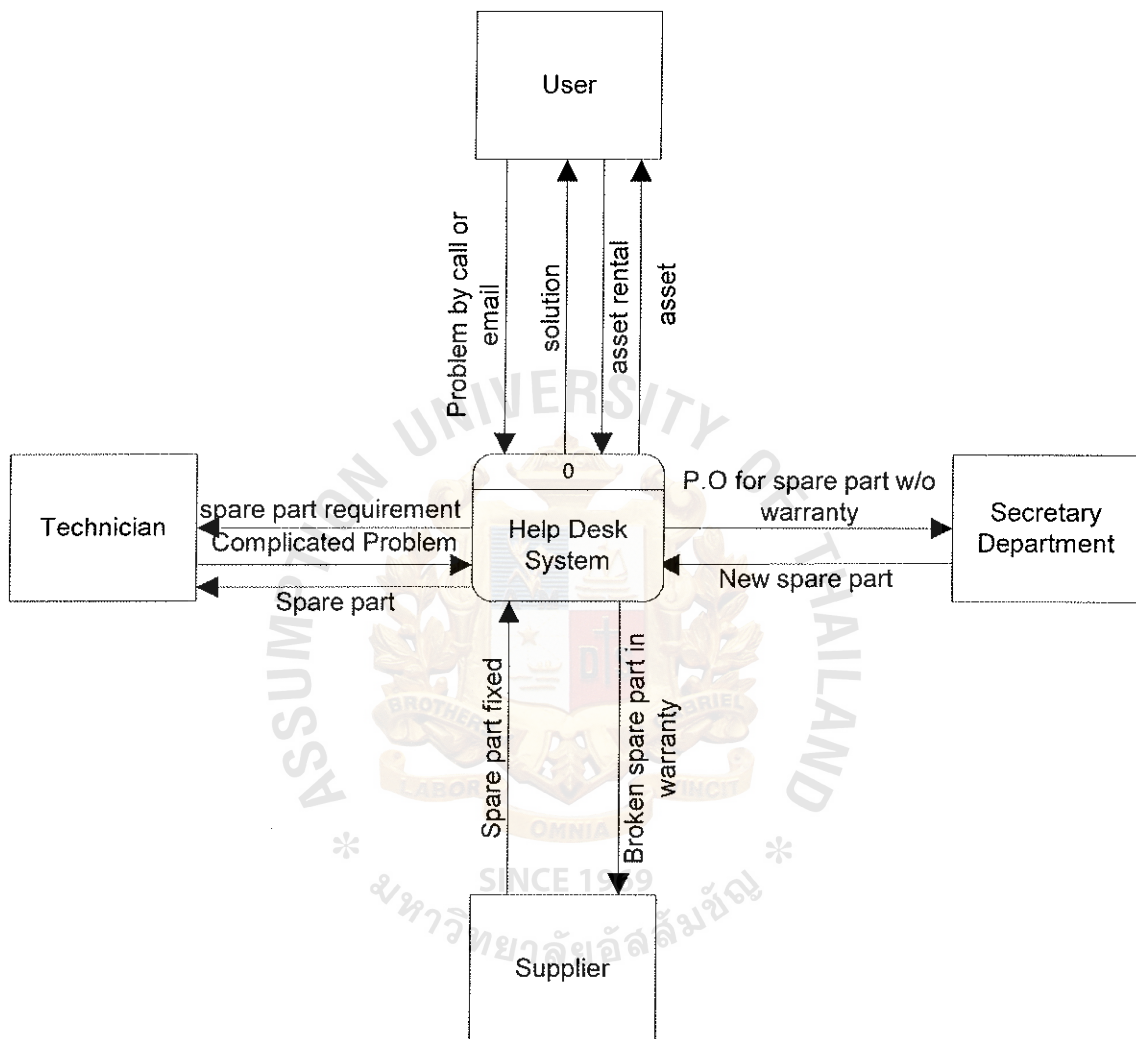
Figure 2.2. Context Diagram of Existing System.

III. PROPOSED SYSTEM

3.1 System Performance Definition

Planning Assumptions

The most important decision in setting up a successful support organization is to start with a strong, clear model for managing users problems to resolution.

It is decided that a 'Web Browser' should be used as the application development tool for the proposed system. The current system uses two operating systems. A flexible application which can run on either operating system is needed. Fortunately, the school has excellent networking and each computer in the school can access the Internet. User friendliness is another important requirement, since users know how to use Browsers such as Internet Explorer or Netscape. Time spent on training for users can be cut down.

The core part of the new system is 'call management' because it is likely to be the mainstay. Its detail will be covered in this chapter.

User Support

In the beginning training will be provided so that users will know how to use the new system, especially for privileged users who have the right to update the pages for which they are responsible. Also the site should provide 'Help' section for users.

Goals of the New System

(1) Less paper needed. At present help desk staff manually fill in the request form for users - one form per user or per a job.

(2) Better proficiency and efficiency: Assists the support engineers in managing their time and their queue of calls by providing job lists with details.

(3)   Keeps records of solved problems to refer back for later use and analysis

such as : the kinds of questions that help desk get, the history of a particular

users.

(4)   Make users feel easy and more comfortable to contact the Help desk and

encourage them solve the simple problem by themselves.

(5)   Better accuracy and less time to solve problems.

(6)   Reduce duplicated work.

(7)   Centralize data that can be used for checking the system performance such

as response time, resolution time, productivity, and trend analysis.

3.2 Design Strategy

As started in Chapter 2, the new system should be more powerful, more flexible

and reliable which can provide the good management. Here is some idea for the design

strategy of the new system.

(1)   Call logging and tracking for all Service Requests

(2)   Prioritized queuing system directs requests to the appropriate support

personnel

(3)   Priority based auto-escalation of Service Requests

(4)   Automatic email notification sent to Users when requests are opened, and

updated on   their behalves.

(5)   Solution Search allows support staff to search a Standard Solutions database

of   Frequently Asked Questions or all historical Service Requests

(6)   Requesters can submit problems electronically – via email or the Web

Interface

(7)   Import Utility allows Users and associated Company and Department to

import information into the HelpDesk database from an ASCII text file

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(8)   Wizards are provided to help new Users with the Startup Procedure and with basic HelpDesk tasks

Benefit of New System

(1)   Reliable Administration - Service Requests won't fall through the cracks. Once a request is logged, it is prioritized and flows to the appropriate Queue or Support Representative. The request will be updated, resolved, and finally closed.

(2)   Reduced Help Desk Costs – The Standard Solutions database provides quick access to the most frequently recurred issues. If a Standard Solution is not found, support personnel can conduct a broader search of all Historical Service Requests.

(3)   Quality Management – The management reporting indicates areas where Help Desk suffers from resource constraints, requiring an increase or re-deployment of staff. Reports can also indicate which Users, Departments, or Companies place the greatest strain on resources, indicating a need for better documentation or training.

(4)   Satisfied Users – With this implementation, Users are aware that their requests are looked after in a fair manner. Problems are handled on a priority basis, and according to priority level assigned.

(5)   Improved utilization of support personnel – Queuing system ensures that tasks are handled by the first available, qualified staff member. Technicians are not burdened with tasks that are outside of their areas of expertise.

(6)   Reduce the number of incoming telephone calls – Requesters can submit requests electronically in their own words via Email or via the Web Interface.

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(7)   Improves resolution times – Support personnel can resolve problems more quickly when a complete inventory of each Requester's PC is readily available.

Benefits to the Help Desk Manager

(1)   Automated tracking of all requests

(2)   Monitoring of Help Desk activities in real-time

(3)   Identification of problem situations before they reach crisis status

(4)   Maintenance of accurate records for every service request

Benefits to Support Reps

(1)   Organization and management of support activities

(2)   Keyword searching and the creation of a Standard Solutions database of solutions to previous problems

(3)   Documentation of support activities

Resolve Design Constraints

(1)   Investment budget should not exceed 500,000 baht

(2)   User-friendly and easy to maintain by local staff

(3)   Reliable storage

(4)   H/W independent

3.3 System Design

Determine logical design alternatives for the new system:

Alternative 1:   To develop the system internally by using manpower within the organization (developed from scratch).

Alternative 2:   To hire or buy the application from an expert group

Table 3.1. Alternatives Decision Criteria.

Evaluation Criteria / Design Alternative	Alternative 1	Alternative 2
Effectiveness of operations (System Goal)		
- Timely management information	3	5
- Timely update information	3	3
Efficient resource utilization	3	3
Resource security	4	2
Processing time	2	4
Investment cost minimization	4	2
Productivity of HelpDesk	3	4
Flexibility of system	4	3
Potential for growth	3	3
Standard of System	2	4
Total score	31	33

The result in the table above indicates that the alternative 2 is a better approach for system implementation.

The Basic Action Workflow

This workflow can be used to model and design interactions between users and suppliers or performers, including support transactions.

The model (in Figure 3.1) includes four separate phases, each ending in a deliverable: preparation, negotiation, performance, and acceptance. First, in the preparation phase, the users makes a request. Then, in the negotiation phase, the support engineer and the users negotiate an agreement. Part of the negotiation is to fully understand the request, including all the user's background and goals around the request

that is, not just what the users wants, but why and how he wants it. Possible responses to the initial request include:

(1)   'I promise' (I agree to provide what you need, when you need it).

(2)   'I decline' (there are clear boundaries around using that response in a support center setting, but the model provides for a negative response, essential if the request cannot be fulfilled).

(3)   'I counter-offer,' which includes alternatives as well as changes in timing, as in 'I will do it tomorrow' when the initial request was for today.
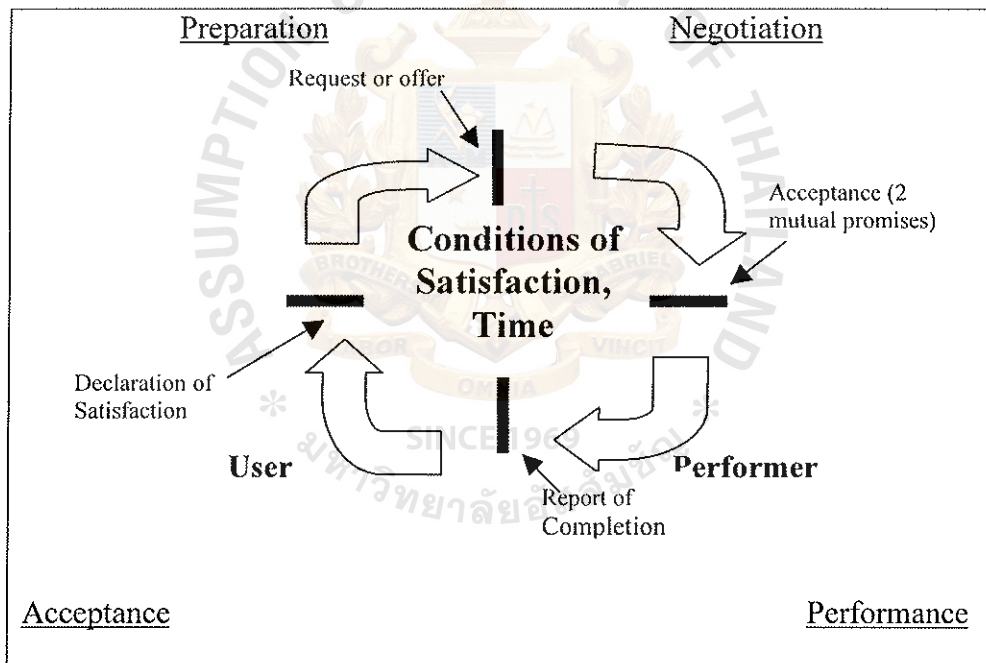
Figure 3.1.   Basic Action Workflow.

If the users and the support engineer agree, the request turns into a mutual agreement, which could be identical to the initial request or changed somewhat. If they do not agree, then the mutual agreement is 'do nothing'.

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Once there is mutual agreement, the support engineer performs the promise and reports its completion back to the users. That's the performance phase. In the acceptance phase, the users evaluate the result against the mutual agreement. If the users is satisfied, the action workflow is complete. If not, the users reports that more work needs to be done, so the support engineer needs to go back to the performance phase.

Call Flow Models

Call flow is the process through which problems are received from the users, solutions are found, and answers are returned to the users.

The traditional call flow model is the 'Frontline/Backline (FL/BL)' model, also called the 'Foreground/Background' model. In the Frontline/Backline model, since it organizes the support center into two groups: (1) the help desk person who takes the incoming calls and tries to resolve them within some short period of time, and (2) the technician or senior support engineers who take the calls that the frontline person can not resolve within the time period.

For the call system, Backliners are more experienced than the Frontline engineers, so are better equipped to resolve problems. They are also organized and scheduled so they can spend long periods of time working on a particular issue without having to handle the incoming call load like frontliners. When a call is passed on to Backline, the users is also passsed on to the Backline engineer, who takes ownership of the call. This provides a rational staff utilization model by allowing the more senior support engineers to work on the more difficult questions.

On the other hand, the users also can submit their requests via our web page. A better approach is to have an application accessible to users that allows for automatic validation and logging of calls. The users enter a call in an on-line form and sends the request. The request is then automatically validated and logged as a call, and an

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acknowledgment is sent back to the user, including the call reference number. The first one who is in charge these requests. It will be the help desk manager or the senior technician (Backliner). He can take ownership by himself or assign the job to the other technicians (in case of complicated request) or to the frontline (for simple request). As Figure 3.2 shows the relation of users, backline and frontline.

Once the call is logged, the interaction is mostly through the phone. In particular, the first contact with the users is usually via phone, since it's the best way to provide clear proof that response time has been met. However, especially with an internal help desk the entire dialog may be conducted via email.

The advantages of this kind of electronic call logging are that it gives users great flexibility in placing calls. Calls may be placed at any time during the day, including when the support center is closed or when the users cannot have access to it. Furthermore, it allows users to provide detailed information when logging calls, which will expedite the resolution of the call. Finally, it removes the overhead of validating and logging calls.
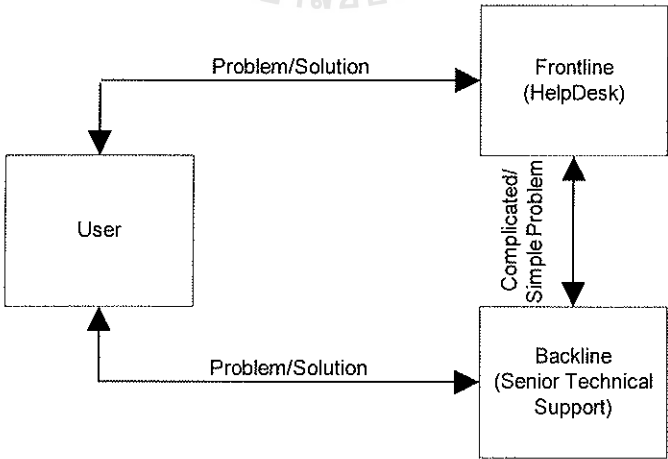
Figure 3.2.   The Frontline / Backline Model.

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3.4 Hardware and Software Requirements

The proposed system will be installed on the network. The server will hold the database where all the data are kept. The database management system (DBMS) manages all transactions, concurrency control and provides necessary features.

The client (PC & Mac terminal) stores the runtime application software with graphic user interface. The terminal will not store data. Fortunately all terminals readily can connect to the network.

Hardware specification

Server unit: Dell Power Edge 2300

   CPU 233 Mhz

   Ram 128 MB

   HDD 6 GB

Software specification

Server Units

   (1)   SQL server 7 for RDBMS

   (2)   Windows NT 4.0 operating system standard version with service pack 6

   (3)   Microsoft Internet Information System

   (4)   Jrun

       Run Java servlets on Web server (Schedule event requests on Web server)

Client Units

   (1)   Operating System

       (a)   For Macintosh clients: System 7.5.3 up

       (b)   For PC clients: Windows 95 up

   (2)   Browser application

       (a)   Netscape or Internet Explorer version 4.0 up

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3.5   Security Control

Normal security such as password is provided. This will screen the people who can access the system and will allow users to perform their tasks in their permission area.

(1)   Log in password can be accessed only by the authorized person.

(2)   Data entry, modification and verification must be made by only authorized person.

(3)   Access right with the database should be organized.

(4)   Protection of duplication should be checked for existence of data entered into the database.

(5)   Data backup/Recover procedures must be organized.

(6)   To prevent loss of data during power failure, a UPS is recommended.

(7)   The database administration must be the function of the computer center staff.

3.6   Cost / Benefit Analysis

System Cost Evaluation and Comparison

Costs of the proposed system can be classified into direct costs and indirect costs. Direct costs are the costs of any changes that directly involve the system such as the initial investment cost or development cost. Indirect costs have no direct effect on the system change, for example, an improvement of work or lower time in processing.

The investment cost can be classified in two categories.

(1)   Development Cost (initial cost)

(2)   Operational Cost (maintenance cost)

The cost of the existing system and the proposed systems are listed as follows:

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3.6.1 Costs

Development cost

Existing resources such as the network, and terminals (Mac & PC) can be used for the proposed system. One additional to keep the Intranet database and the new software.

Hardware:

(1)   Dell power edge 2300, 1 unit   80,000   Baht.

Software:

(1)   Operating System NT standard version 4.0 (300 users)   16,000   Baht.

(2)   SQL version 7.0 (Internet connection for unlimited users) 117,000   Baht.

(3)   Hiring outsource agent   150,000   Baht.

Total development cost(part one)   363,000   Baht.

Operating Cost

The operating cost is the cost which occurs day by day while the system is running. It includes the recurring cost such as the cost of maintenance of hardware and software and training etc. All the operating costs are shown in Table 3.2 (Existing System) and Table 3.3 (Proposed System).

3.6.2 Benefits

Benefits obtained from the proposed system are divided into 2 different types as follows:

(1)   Tangible benefits

A reduction in equipment cost, time or labor quantifies the tangible benefits. As it has shown in Table 3.3, it is expected that staffing levels will need to be increased if the existing system is retained.

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With the new system this increase in staff will not be necessary, it is estimated that this will be about 850,000 baht within 5 years. Also the new system can reduce the cost in paper usage by about 68,000 baht . This means the estimated savings the company will make is almost a million baht within 5 years.

(2) Intangible benefits

Intangible benefits imply an improvement of information, increasing of security and service level. Although they cannot be quantified, they are important to the organization to reach the goals and solving the management decision-making problems as follows:

(a) Reduce paper work

(b) Better information for decision making

(c) Reduce time for report generating

(d) Improve service quality to end-users

(e) To develop and improve the standards of users operations process and quality service to users

(f) To make information more accurate, reliable and valid

(g) To reduce data redundancy

(h) To correctly provide available information to top management for decision making

(i) To improve effectively advanced technology in communication of data in order to have more competitive edge.

(j) To support the growth of business in expanding stores and product lines.

There are many methods to represent Cost and Benefit Analysis as follows:

Return of Investment (ROI)

This formula will calculate the percentage of benefits obtained from investing in. Figure 3.3 shows that ROI of the proposed system is 29.39% within five years.

Payback Analysis

Payback Period is the time before the investment has been paid back by profit received, before the Break Even Point. In this case, the benefit and cost of proposed system are compared to get the result of system pay back time. It can be seen from Figure 3.4 that the new system will pay back in the first year.

Break Even Point

It is a technique that provides information to decision maker about the worthiness of the proposed system. This means the duration of an investment until earn money for a while the earnings are just pay back the money which has invested. When it has earned the same amount of money that has been invested. This is called the break even point. After this point, it will be a profit. Break Even Point is the point at which total costs of the current system and proposed system intersect representing the Break Even Point where it becomes profitable for the business to get the new information system. Figure 3.5 shows the Break Even Point which is in the first quarter of second year.

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Table 3.2. Existing System Cost, Baht.

Cost Items	Years				
	1	2	3	4	5
Operation Cost					
To hire one more person in next few year (increasing part 10% / year)		180,000	198,000	217,800	239,580
Utility Cost 10,000/year	10,000	10,000	10,000	10,000	10,000
Overhead expense (inflat. 5%)	31,500	33,075	36,383	40,021	46024
Total Cost	41,500	223,075	244,383	267,821	295,604
Discount 15%	0.8695	0.7561	0.6575	0.5717	0.4971
Net Present Value (Cost only)	41,499	223,074	244,382	267,821	295,603

Table 3.3. Proposed System, Baht.

Cost Items	(one time)	1	2	3	4	5
Estimated Saving						
Improve on service& gain more productivity task		10,000	11,000	12,000	15,000	20,000
Reduce hiring more staff		-	180,000	198,000	217,800	239,580
(Salary 18,000 baht and increasing 10% per year)						
Paper saving		20,000	22,000	24,200	26,620	29,982
Total Estimate saving		30,000	213,000	234,200	259,420	289,580
Estimated Initial Cost						
H/w acquisition	80,000	16,000	16,000	16,000	16,000	16,000
S/w acquisition	133,000	26,000	26,000	26,000	26,000	26,000
Staff training	10,000	2,000	2,000	2,000	2,000	2,000
Outsourcing cost	150,000	30,000	30,000	30,000	30,000	30,000
Total estimated initial cost	373,000	74,600	74,600	74,600	74,600	74,600
***Divided the Estimated Initial Cost into each year						
Estimated operating cost						
H/w and S/w maintenance		-	-	-	20,000	22,000
Depreciation		42,600	42,600	42,600	42,600	42,600
Utility Cost 15,000 b./year		15,000	15,000	15,000	15,000	15,000
Overhead expense (inflat. 5%)		21,500	22,575	23,704	24,889	26,133
Total Operating Cost		79,100	80,175	81,304	102,489	105,733
Total Initial & Operating Cost		153,700	154,775	155,904	177,089	180,333
Net Profit		266,300	487,225	550,296	599,731	674,869
Discount (15%)		0.8695	0.7561	0.6575	0.5717	0.4971
Net present value (Estimate Saving — Cost)		231,548	368,391	361,820	342,866	335,477

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Return on Investment Analysis (for Proposed System)

Table 3.4. Compared between the Benefit and Cost of Proposed System, Baht.

Years	Proposed System	
	Benefit	Cost
1	30,000	153,700
2	216,000	154,775
3	240,000	155,904
4	272,800	177,089
5	304,580	180,333
Total	1,063,380	821,801

$$\text{Formular ROI} = \frac{\text{Total Benefit - Total Cost}}{\text{Total Cost}} \times 100$$

$$= \frac{1,063,380 - 821,801}{821,801} \times 100$$

$$= 29.39 \text{ percent}$$

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Table 3.5. Compared between the Benefit and Cost of Proposed System, Baht.

Years	Proposed System	
	Benefit	Cost
1	30,000	153,700
2	246,000	308,475
3	486,000	464,379
4	758,800	641,468
5	1,063,380	821,801
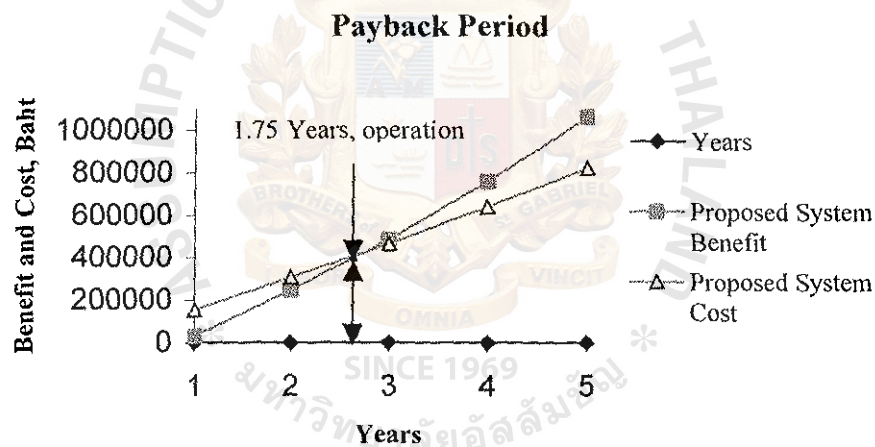
Figure 3.3. Payback Period.

Table 3.5. Cost Comparison between Existing System and Proposed System, Baht.

Year	Cumulative Cost Existing System	Cumulative Cost Proposed System
1	41,499	153,700
2	264,573	308,475
3	508,955	464,379
4	776,776	641,468
5	1,072,379	821,801
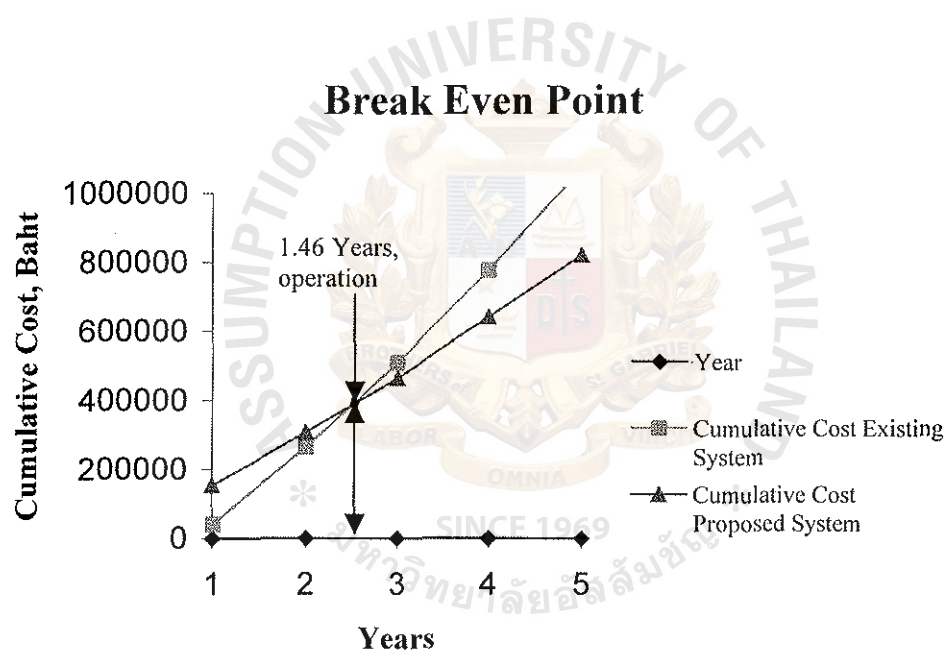
Note: Year 1 is the starting point

Figure 3.4. Break Even Point.

IV. PROJECT IMPLEMENTATION

4.1 Overview of Project Implementation

The project implementation is the process of assuring that the information system is operational and then allowing users to take over its operation and evaluation. The implementation process is concerned with the installation of the computerized system replacing the manual system. The implementation process is set up using the parallel run concept, running both systems in tandem until the new system is proven to be correct and reliable. Afterwards the old system is removed so that users do not have to enter data into both systems.

4.2 Stages of Implementation

The implementation phase of the new system consists of five stages which are programming, testing, installing, training, and results of the implementation.

4.2.1 Programming

Programmers must understand how the system is to operate. They use available documentation, including; data flow diagrams, specifications etc. Web programming languages such as 'HTML', 'Java', 'CGI' and so on are used to develop interface screens (input & output) for users to interact with SQL Server 7.0 database management system. A data dictionary and data elements are used to develop data layout with indexes of-sequential files.

4.2.2 Testing

The testing of Beta programs has become commonplace as part of deploying new products. The idea of a beta program is to share software with users before declaring it ready to be shipped. Users test the product in real applications and provide feedback both on the quality of the products (are there any bugs?) and on its usability.

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The feedback can then be incorporated into the final product to improve its quality and its attractiveness to users. During the beta test, the software development company has a chance to test its processes, and in particular its support processes, as they work with the new product. The goal of this stage is that large problems can be fixed before they are shipped.

In this stage, the system uses 10 volunteers from each school (High school, Middle school and Elementary school) and 10 volunteers from staffs in administration and support roles. Also technical support staffs and help desk staff are needed to join this testing. These volunteers will test the program in real situations and inform the staff coordinator of errors and changes required. This staff coordinator has to be a person from technical support or the help desk as he or she will understand the system better. This person will also collect all information and coordinate with the programmers (outsourced person).

All volunteers need to complete the testing form (Figure. 4.1) after they tested the program.

```
┌─────────────────────────────────────────────────────────────┐
│                       TESTING FORM                          │
│                                                             │
│                                                             │
│  Help Desk Project          Date : _____ / _____ / 2001     │
│                                                             │
│                                                             │
│  Volunteer from                                             │
│                                                             │
│      Elementary School                                      │
│                                                             │
│       Middle School                                         │
│                                                             │
│       High School                                           │
│                                                             │
│       Other offices _____                         │
│                                                             │
│                                                             │
│  Satisfaction                                               │
│                                                             │
│       Accept                                                │
│                                                             │
│       Accept but need to change some little thing           │
│                                                             │
│       Not accept need to change a lot                       │
│                                                             │
│       Not accept. Renew                                     │
│                                                             │
│                                                             │
│  Remark                                                     │
│                                                             │
│  _____        │
│                                                             │
│  _____        │
│  _____        │
│  _____        │
│  _____        │
└─────────────────────────────────────────────────────────────┘
```

Figure 4.1.   Testing Form.

4.2.3 Installation

First of all, the system technical specialist will determine the location where the system will be sited, the electrical wiring, air conditioning needs, and humidity controls. Site preparation should be completed before the arrival of the equipment. The electrical cords should be checked to ensure that they are free of power fluctuations.

After that they will install the hardware, before converting some of the data in order to check it for errors test it with the new application.

4.2.4 Training

Training users to interact with the computer-based system is an important part of the implementation as they must know the basics such as turning on the machine, what to do with common errors, basic troubleshooting. Subsequently, they must be able to run the proposed system without any intervention from the analyst or programmer. Mostly users will be experienced with Internet Browsers such as Internet Explorer or Netscape Navigator. User manuals will be provided. The advanced users who are authorized to update the system will need training In their tasks. Also 'Help' functions will be provided in the program.

4.2.5 Results of the Implementation

After training the users and testing, some data is converted again to determine whether the data is correct in the operational environment. Both the system analyst and the user departments must assign time to convert data and parallel test it. This happens in a time period so that both system analyst and users can assure that the data is correct and the users are prepared to handle the new system. During the parallel run, the analyst and the programmer have to pay more attention to explaining and training users step by step. Providing support each user individually as much as possible and evaluating problems as they occur and find out how to solve them. A checklist sheet is provided as

a tool to support users in checking for mistakes in the data and in showing the steps for complex operations.

Finally, both the system analyst and the users must solve any problems that occur and decide together whether the new system can run or not.

4.3 Conversion

Currently the old system keeps paper records of user requests, with user records, asset records, and spare part records being kept by using 'Excel' in a 'Help Desk' computer. In the proposed system, these records will moved to be a part of the main system, the new system will provide an 'import' utility. After the conversion, the help desk person will print out and check data between the old and new system to ensure they are the same.

4.4 Disaster Recovery Planning

All the plans and implementation details have settled on so far come into question if the support center cannot operate at all – for instance, because of a power failure – or if the system cannot be reached by the users because of a phone failure.

Most users, even those with critical needs, may be able to tolerate a short down time (say, under one hour). A good rule of thumb is that system can afford to be down for the length of the shortest response time.

Planning for disaster recovery makes the recovery process much easier and is very useful for the problems that are likely to happen often, such as power or phone failures.

Here are some recovery planning ideas:

(1)   Phone system down

    (a)   Route calls to another number.

    (b)   Have a paper system to back up to the on-line call tracking system.

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It's actually quite easy to work without the call tracking system

for short periods of time.

(2)   Power failure

Use UPS (Uninterruptable Power Supplies) for key machines and

phone systems. The size the UPS is based on past experience of lengthy

power failures, and of course they are tested before use.

V. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

Much like an ER in an hospital, a Support organization's day-to-day life is filled with routine problems and extreme emergencies. It has to work in a mode of constant reaction to the next situation, the next crisis that demands immediate attention. This is not the job that allows for careful design and regular, step-by-step implementation of a plan. Rather, it involves coping with the barrage of requests constantly coming in.

In addition to the interrupt-driven flow of events, there is an emotional aspect to the job, one that is compounded when chaos rather than coordination characterizes the work environment. In the best of times and with the best of organizations the help desk staffs are always dealing with users whose emotions run from curiosity to panic and anger. Rarely does someone call with good news or a thank you. This, as is well known, can be a source of stress for help desk staff. When organizations are not designed well to handle the predictable unpredictability of support operations, staffs encounter their own frustration, and even panic and anger. These are predictable consequences when it begins in an organization not prepared to deal with it effectively.

Life in a support environment is never going to be like life in an engineering environment where there are regular periods of uninterrupted work, not to mention periods of calm and reflection. Technical support will always provide a certain amount of excitement and uncertainty.

So the new system helps to achieve the goals. This Help Desk System won't be to reduce the staffs in the organization and won't require more staffs either. But the new system will help the work performance be more productive, sufficient and reliable.

The Table 5.1 shows the degree of achievement of both systems. All of the processes of the proposed system are faster than the existing system, which is currently consuming lot of time.

In the past, the help desk staff has done most activities manually. When a user informs a problem, some record might be lost, or redundancy, or the help desk person may get incorrect information. But in new system the users can also fill in the request themselves. The help desk or technical staffs can track the process in the new system, the staffs who are in charge will know what's going on in each job by monitoring the job via the screen. The help desk person doesn't waste time searching through paper records or asking the technician for updates. This means the computerized system provides more accuracy, reliability and productivity. You can see how time consuming the other process is in the table below.

The following table shows the amount of time that common transactions take under the existing system and by comparison how long they are expected to take under the proposed system.

Table 5.1. The Degree of Achievement of the Proposed System.

Process	Existing System	Proposed System
Accept Service Request Process	5 mins	5 sec
Service Tracking Process	15 mins	30 sec
Record Modification Process	30 mins	1 min
Report Preparation Process	5 hrs	5 mins
Inquiry Process	30 mins	1 min
Total	6 hrs 20 mins	7 mins 35 sec

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Table 5.2 gives more detail than Table 5.1. It shows how the existing system works and compares it with the proposed system explaining how the proposed system will use less time than the old system.

Table 5.2. The Process Description.

Process	Existing System	Proposed System
Accept Service Request Process	Fill in the request into the paper form.	Fill in the request via Intranet form which will provide user detail automatically if the user is authorized
Service Tracking Process	Open the book and look for the related record.	Click 'search', this can be by 'user', 'date', 'technician name' or 'job reference number'
Record Modification Process	Open the book to look for the related record and modify it.	Click 'search', this can be by 'user', 'date', 'technician name' or 'job reference number'
Report Preparation Process	This could not be easily provided.	Select the field that user wants and print it.
Inquiry Process	Use the knowledge and experience.	Search in FAQ, or the History of that request.
Total	6 hrs 20 mins	7 mins 35 secs

5.2   Recommendations

When there are many users visiting the Help Desk pages and filling in their request forms at the same time, it might take a long time to transfer data from the users to the server and back to users again. This can cause older computers to freeze creating the need to reboot.

This project will only focus on one function in one department, but it can be a model or idea for those who want to develop centralized Help Desk system in other departments. Which means whenever a problem arises, whether a computer being

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broken, 'error type 11' for Macintoch, can't flush a toilet, leaky roof etc ... "Just think of Help Desk, you will get help."

In the near future if this service becomes more efficient and more predictable, it can plan to have another service for the users called 'Call monitoring'. Call monitoring includes making the call tracking system available to users on-line, so that users can monitor calls throughout their life-spans. This would be available for users in read-only mode, full call monitoring allows users to check the status of calls at any time.

APPENDIX A

OVERVIEW OF THE PROPOSED SYSTEM

OVERVIEW OF THE PROPOSED SYSTEM

New system is organized around the following entities:

    (1)   The Players (Users, Departments, Queues, etc.)

    (2)   Relationships among the Players

    (3)   The Service Request

    (4)   Service Request Workflow
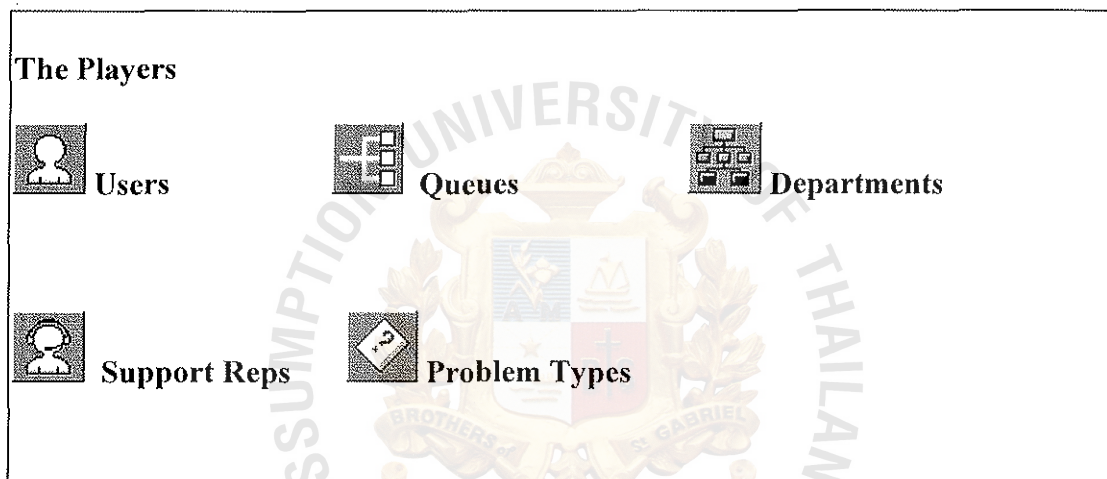
Figure A.1. The Player.

Relationships among the Players

    (1)   Company is segregated into Departments.

    (2)   Internal Users are associated with a Department

    (3)   Users who provide service to other Users are granted Support Rep status

    (4)   Support Reps are assigned to appropriate Queues (Queue Assignment)

    (5)   Dispatchers receive Service Requests from Users and forward them to the appropriate Queue or directly to a Support Rep

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The Service Request

(1) A new Service Request or Job Request is created for each new job, call, or activity that is undertaken by Help Desk.

(2) Each Service Request must be associated with a specific Requester (request originator), and assigned an appropriate Problem Type. As a result, reports can be generated; showing Service Requests grouped by Problem Type, by User, by Company, or by Department (since each User is associated with one specific Company or Department).

Service Request Workflow

The term Workflow describes the process whereby a Service Request flows through various stages of a life cycle (called states), being appropriately prioritized, forwarded, and scheduled as necessary. Typically, the steps include:

(1) Opening the Request

(2) Dispatching

(3) Accepting for Service (by Support Reps)

(4) Updating Request (logging action taken)

(5) Closing Request

(6) Approving Completion

A new Service Request flows from the User with the problem to Dispatch, then to Queue, on to Service and then Closed. The new system accommodates real-world complexity by providing a completely general workflow model.
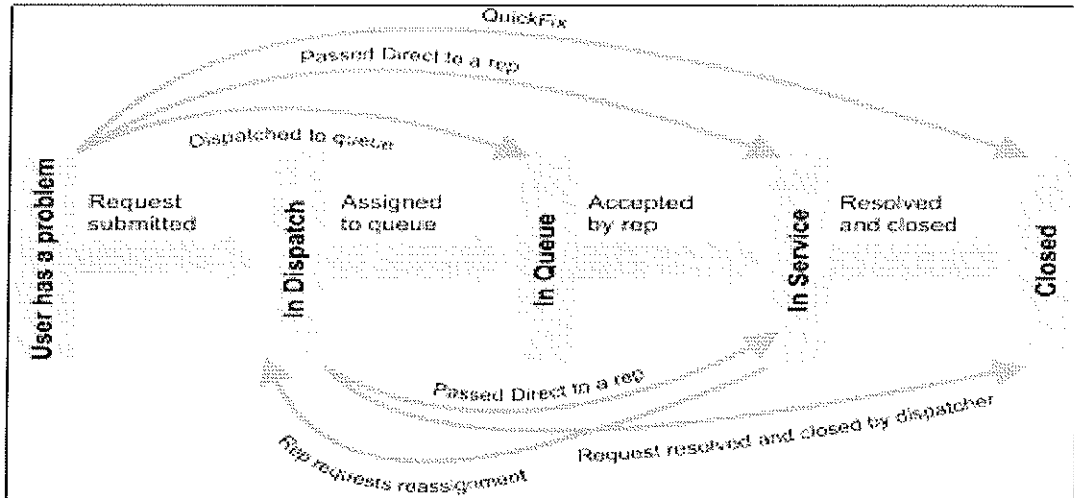
Figure A.2. Service Request Flows.

Quick Fix

Quick Fix refers to requests that are opened and closed at the same time. This can occur when a problem is solved in one telephone call or when a Support Rep enters the details of already-completed work. To submit these types of requests, the Support Rep must have the Quick Fix privilege.

Pass Direct

Pass Direct refers to the action of passing a request directly to a Support Rep, bypassing HelpDesk queuing structure. Requests that are passed direct are placed In Service rather than In Queue. The Pass Direct Privilege is required.

Passing Direct among Support Reps

It is also possible for one Support Rep to Pass Direct a request which he is currently working on to another Support Rep.

APPENDIX   B
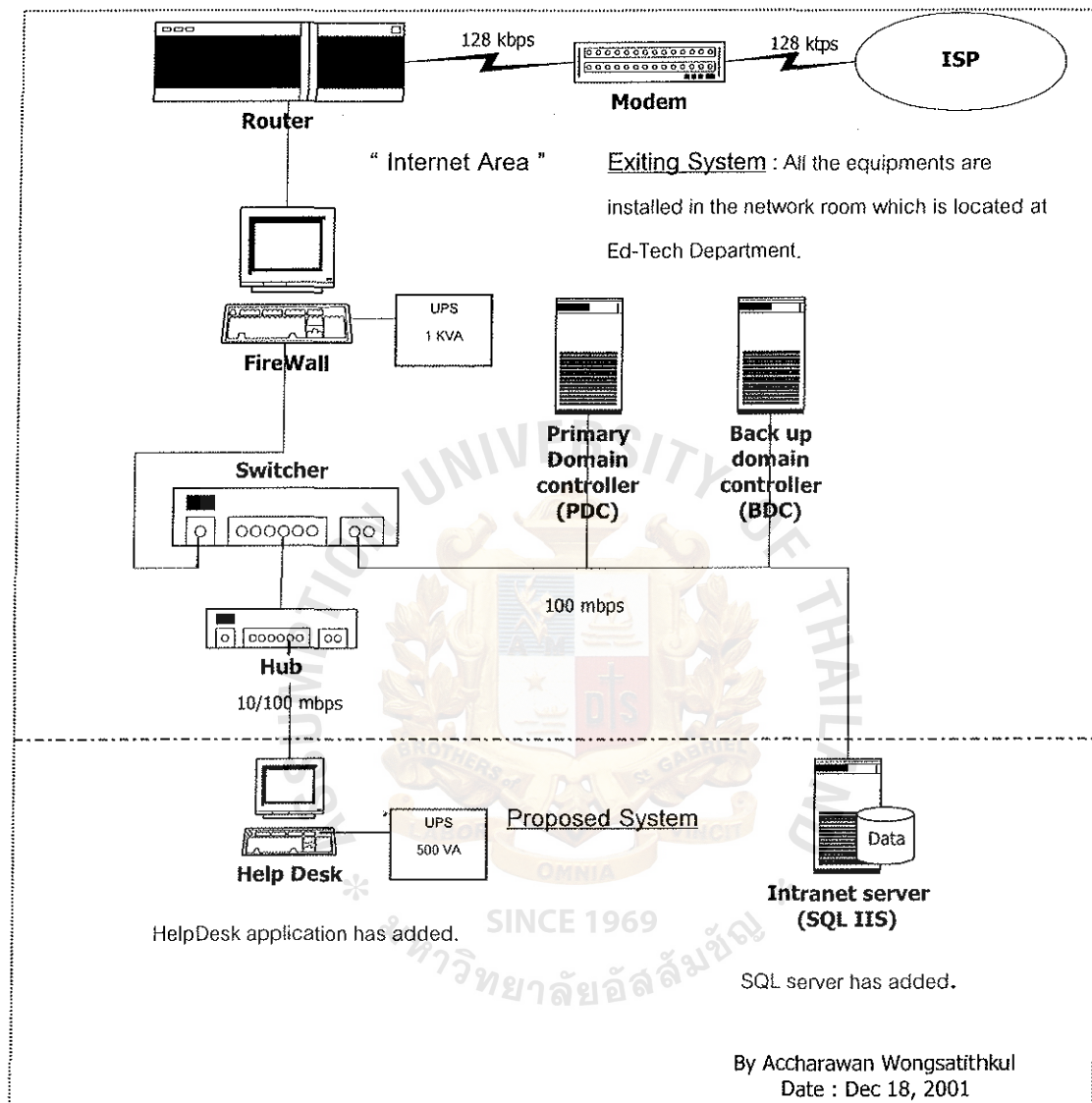
CAMPUS NETWORK

Figure B.1.   Campus Network System of Proposed System.

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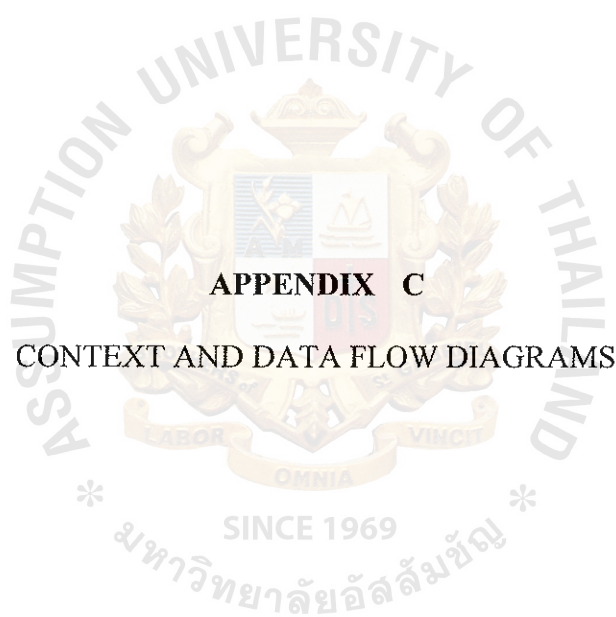
APPENDIX   C

CONTEXT AND DATA FLOW DIAGRAMS
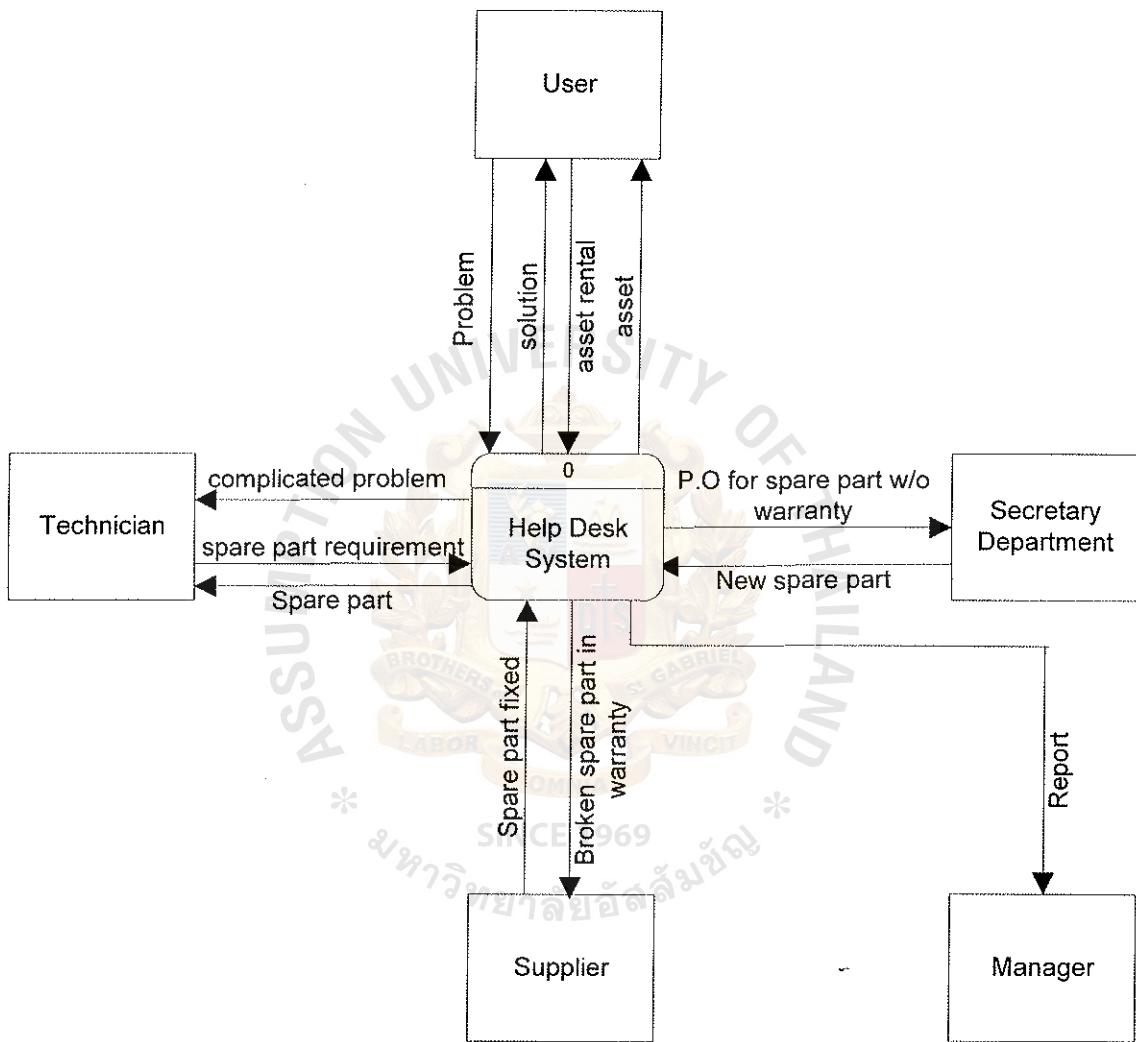
Figure C.1. Context Diagram of Proposed System.

40
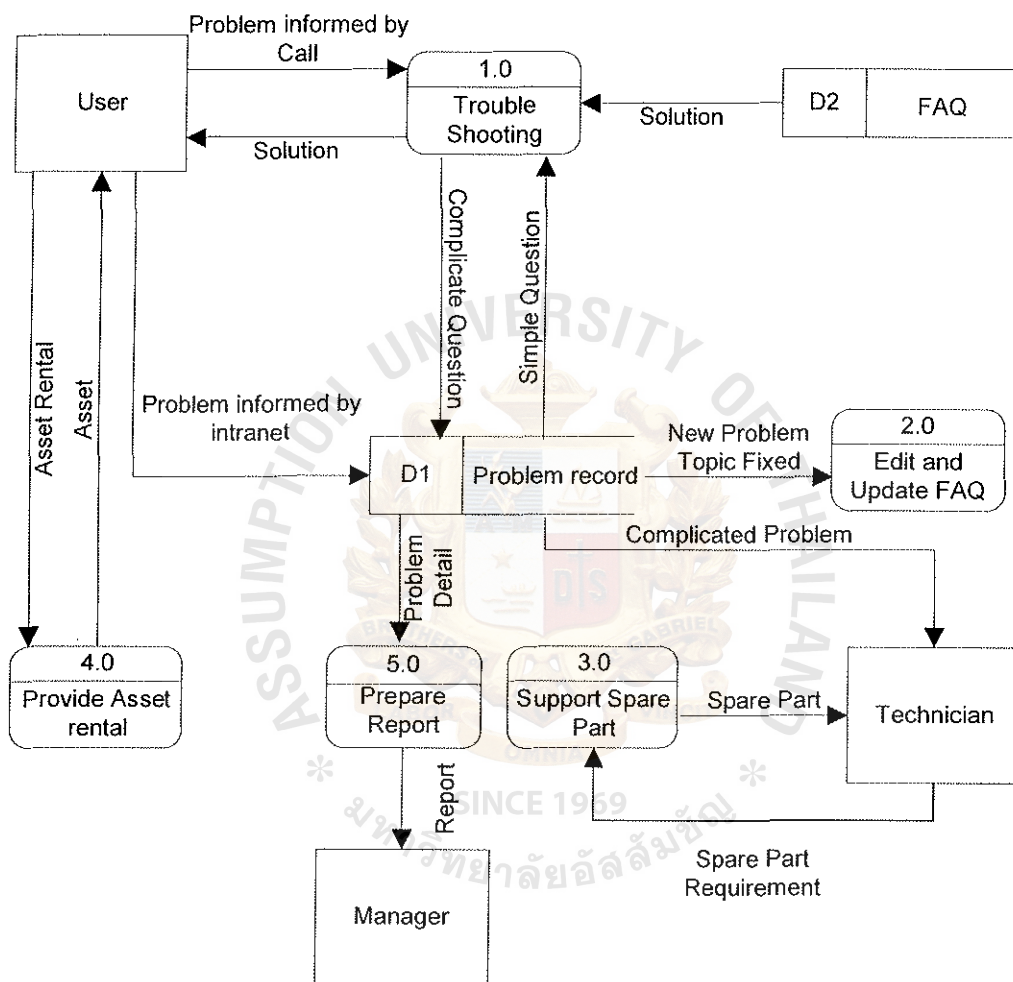
Figure C.2. Data Flow Diagram Level 0.

41
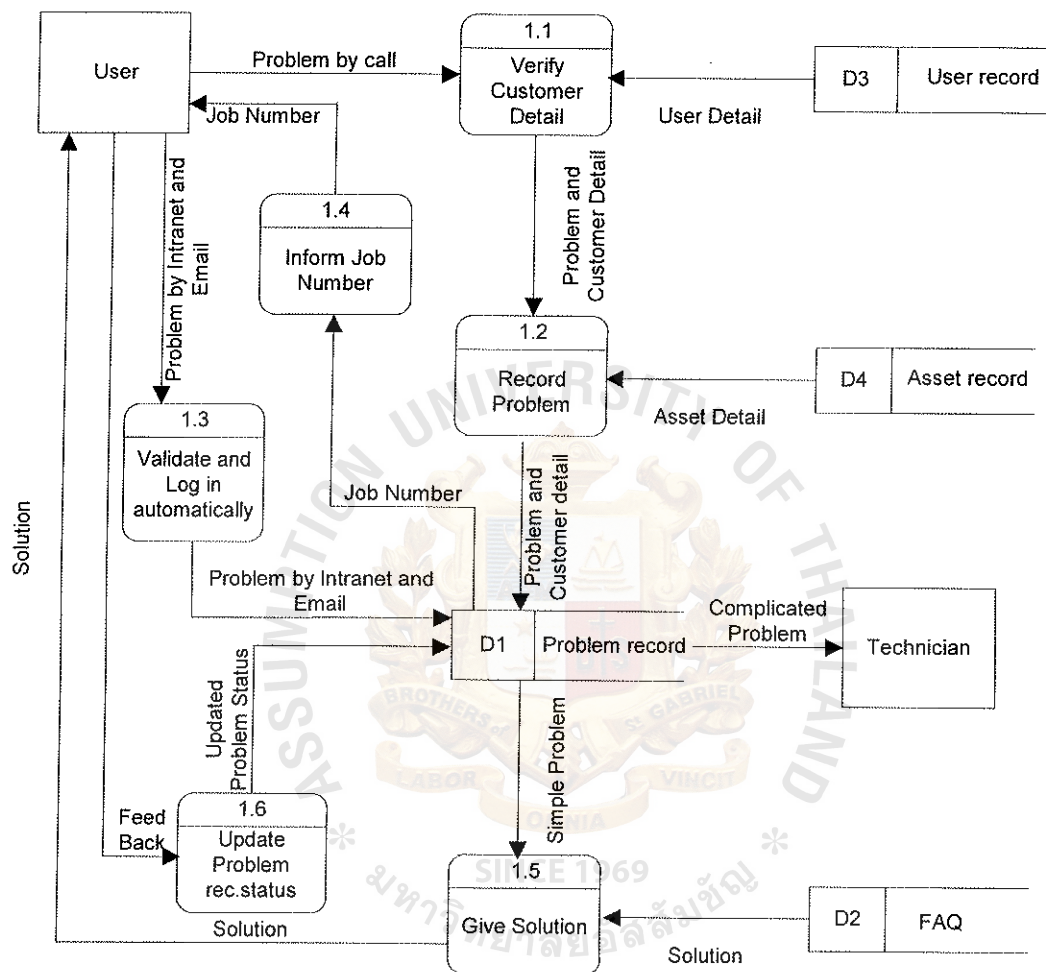
Figure C.3. Data Flow Diagram Level 1.

42
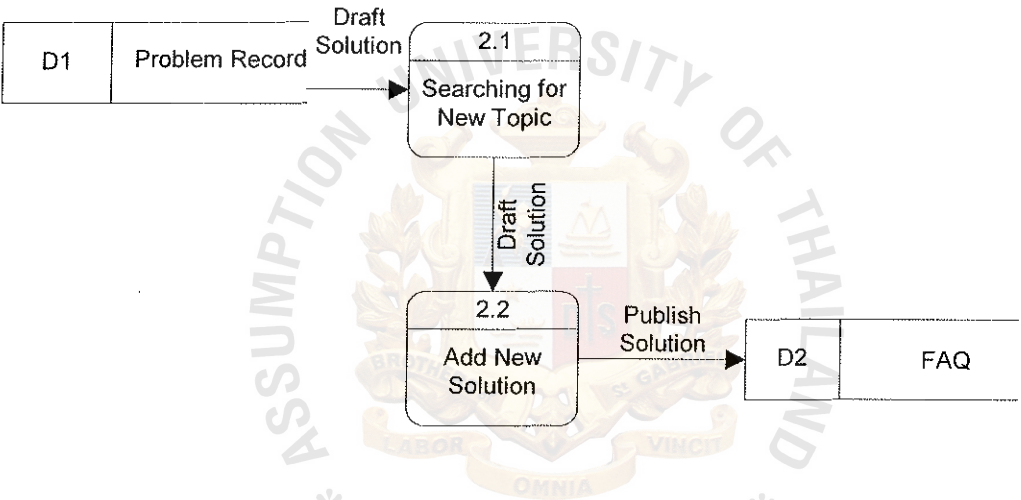
Figure C.4.   Data Flow Diagram Level 2.
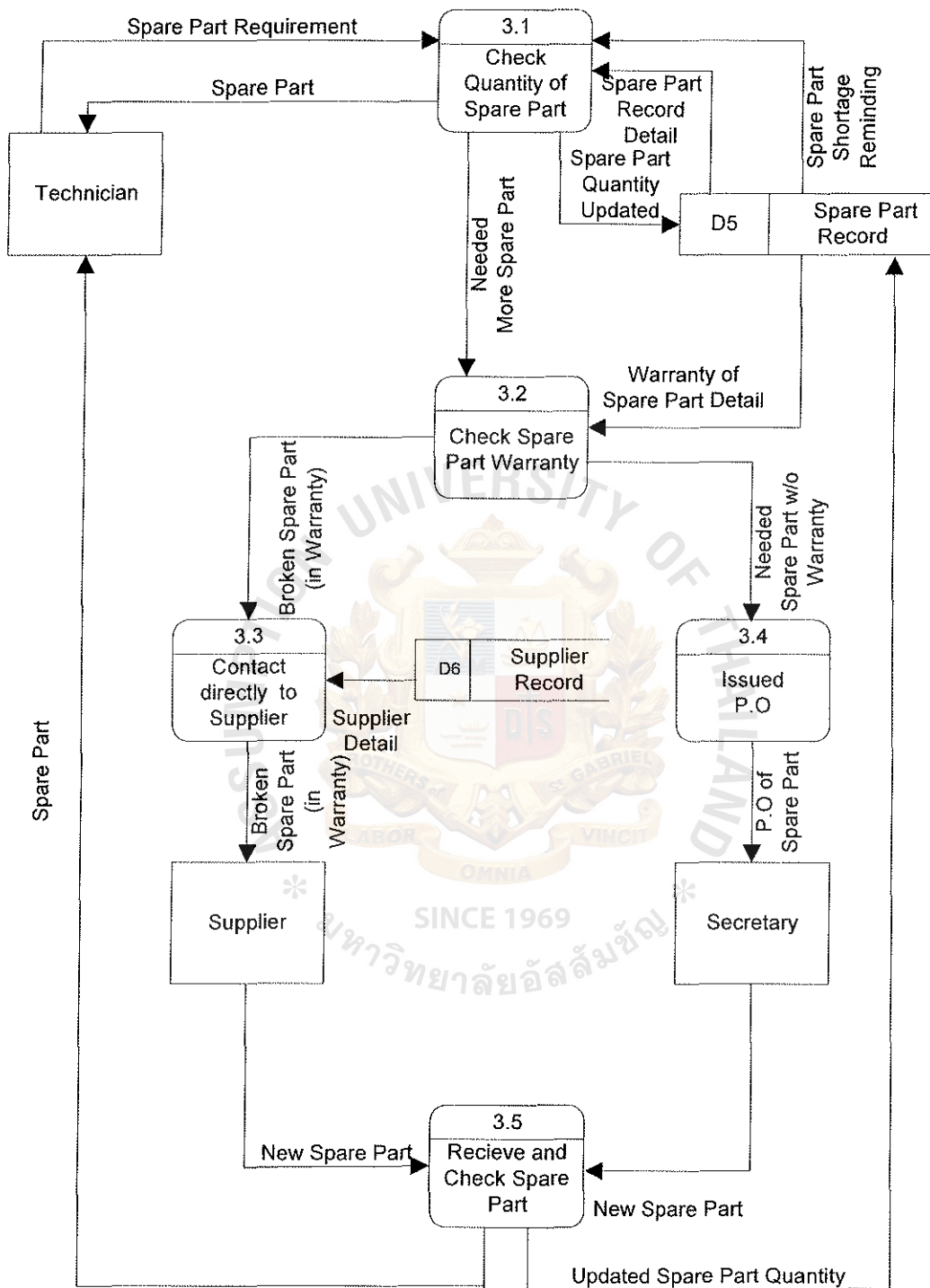
Figure C.5. Data Flow Diagram Level 3.

44
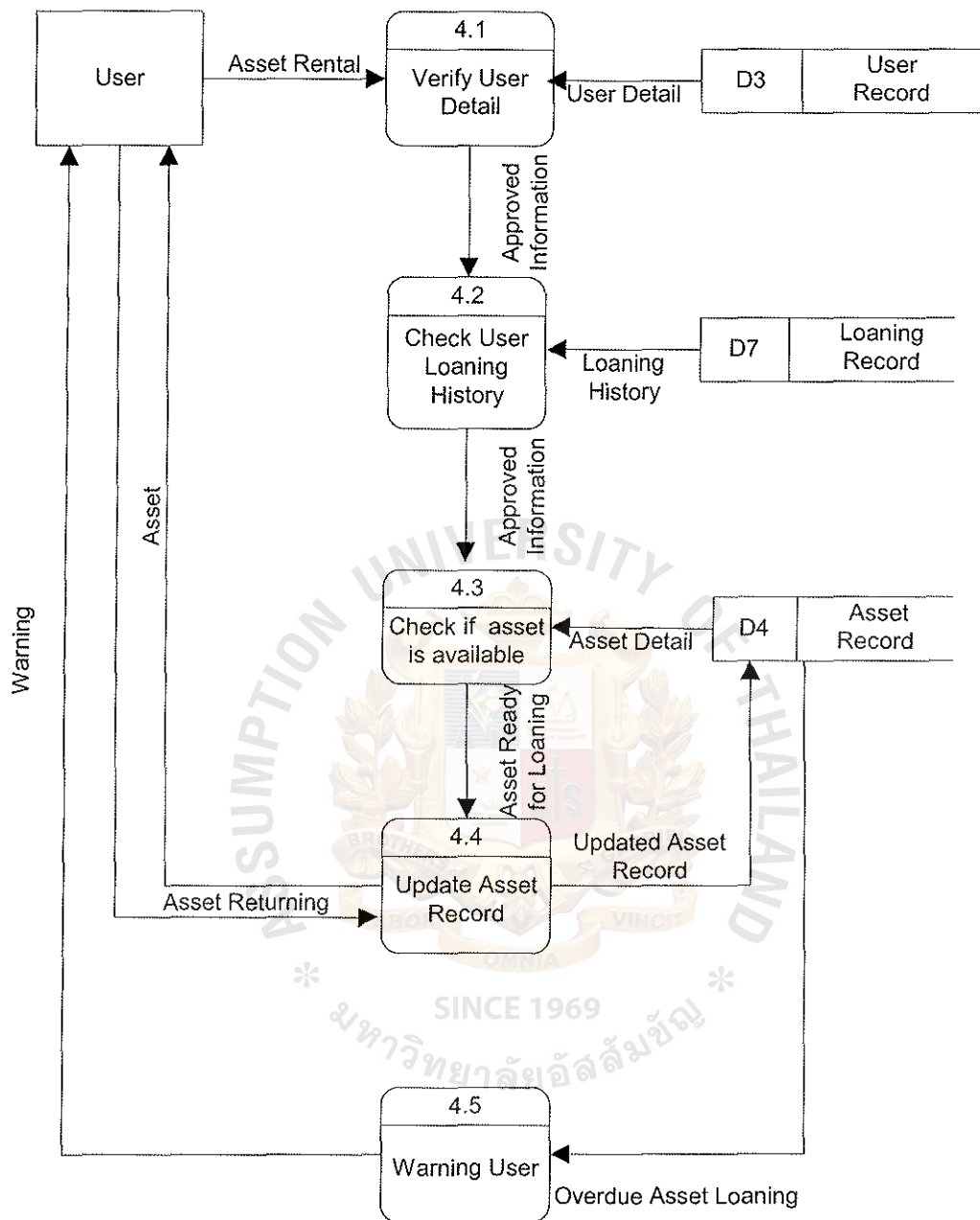
Figure C.6.   Data Flow Diagram Level 4.
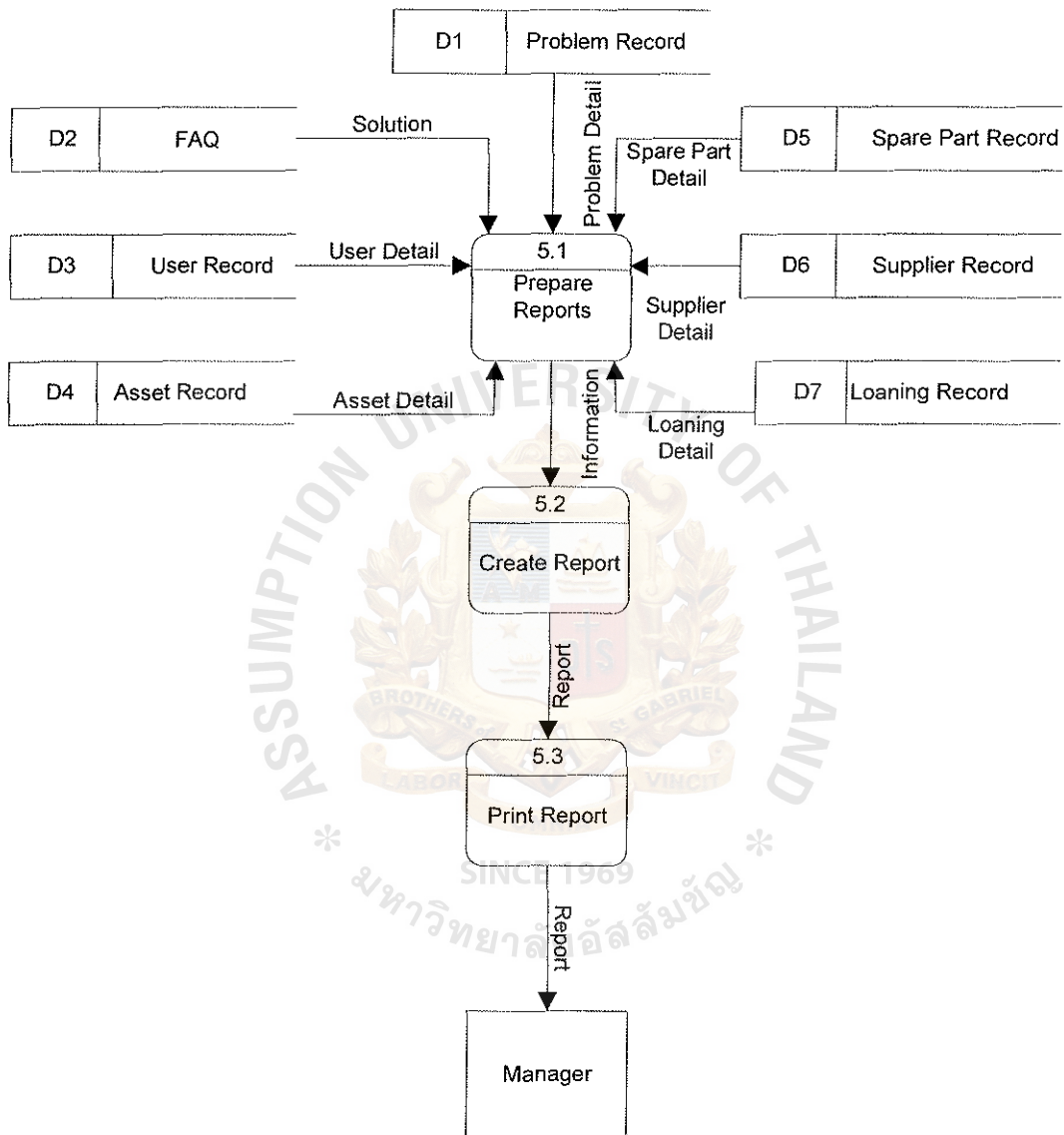
Figure C.7. Data Flow Diagram Level 5.

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APPENDIX D

PROCESS SPECIFICATIONS

Table D.1. Process Specification of Process 1.1.

Items	Description
Process Name:	Verify user detail
Data in:	(1) Problem by call and Email (2) User detail
Data out:	(1) User detail
Process:	(1) Check user from 'User record'. (2) Confirm location
Attachment:	(1) User record

Table D.2. Process Specification of Process 1.2.

Items	Description
Process Name:	Record Problem
Data in:	(1) Asset detail
Data out:	(1) Problem detail (2) User detail (3) Asset detail
Process:	(1) Get serial number of asset which has a problem. (2) Get and record problem into problem record. (3) Issued request number to user.
Attachment:	(1) Problem record (2) User record (3) Asset record

Table D.3. Process Specification of Process 1.3.

Items	Description
Process Name:	Validate and login
Data in:	(1) Problem via Intranet
Data out:	(1) Problem
Process:	(1) Validate user ID and log on user to the HelpDesk system automatically
Attachment:	(1) Solution record (2) Problem record

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Table D.4. Process Specification of Process 1.4.

Items	Description
Process Name:	Inform job number
Data in:	(1) Job number
Data out:	(1) Job number
Process:	(1) Validate user ID and log on user to the HelpDesk system automatically
Attachment:	(1) Solution record (2) Problem record

Table D.5. Process Specification of Process 1.5.

Items	Description
Process Name:	Give solution
Data in:	(1) Simple problem (2) Solution from FAQ record
Data out:	(1) Solution
Process:	(1) Give solution to user
Attachment:	(1) Solution record (2) Problem record

Table D.6. Process Specification of Process 1.6.

Items	Description
Process Name:	Update problem record status
Data in:	(1) Feed back
Data out:	(2) Problem status updated
Process:	(1) If 'the problem' was solve, 'the status' changed to 'Done' by 'HelpDesk ID' in 'Technician' field. (2) If 'the problem' can't solve, leave the status 'Still can't solve' by 'HelpDesk ID in 'Technician' field. Also add the detail in 'diagnosis' field as a history about what has been adviced to user.
Attachment:	(1) Problem record (2) Technician ID

Table D.7. Process Specification of Process 2.1.

Items	Description
Process Name:	Searching for new topic
Data in:	(1) New problem sloved
Data out:	(1) New interesting problem sloved
Process:	(1) Search for the problem has been 'done' from 'date' to 'date' (2) Select only the interesting problem with its solution
Attachment:	(1) Problem record

Table D.8. Process Specification of Process 2.2.

Items	Description
Process Name:	Add new solution
Data in:	(1) New interesting problem solved
Data out:	(1) Interesting problem solution
Process:	(1) Adding the problem and solution in 'FAQ' record.
Attachment:	(1) Problem record

Table D.9. Process Specification of Process 3.1.

Items	Description
Process Name:	Check quantity of spare part
Data in:	(1) Spare part requirement (2) Detail of spare part record (3) Spare part shortage reminding
Data out:	(1) Spare part (2) More spare part requirement (3) Quantity of spare part updated
Process:	(1) Get detail of spare part from 'spare part' record. (2) Give spare part to technician (3) Update the quantity of spare part
Attachment:	(1) Spare part record

Table D.10. Process Specification of Process 3.2.

Items	Description
Process Name:	Check warranty of spare part
Data in:	(1) More spare part requirement (2) Spare part warranty detail
Data out:	(1) Spare part in warranty (2) Spare part without warranty
Process:	(1) Get warranty detail from 'spare part' record.
Attachment:	(1) Spare part record

Table D.11. Process Specification of Process 3.3.

Items	Description
Process Name:	Contact supplier
Data in:	(1) Broken spare part in warranty detail (2) Supplier detail
Data out:	(1) Broken spare part in warranty detail
Process:	(1) Contact and make a due-date of sending a new spare part with supplier
Attachment:	(1) Spare part detail

Table D.12. Process Specification of Process 3.4.

Items	Description
Process Name:	Issued PO
Data in:	(1) Spare part without warranty needed
Data out:	(1) Spare part purchase order
Process :	(1) Contact and give the detail of spare part requirement (with supplier detail if possible) to the department secretary. (2) Issue purchase order
Attachment :	(1) Spare part detail (2) Supplier detail

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Table D.13. Process Specification of Process 3.5.

Items	Description
Process Name:	Receive and check spare part
Data in:	(1) New spare part
Data out:	(1) Spare part (2) Update spare part quantity
Process:	(1) Receive and check spare part from user or secretary of department. (2) Update quantity of spare part record
Attachment:	(1) Problem spare part detail

Table D.14. Process Specification of Process 4.1.

Items	Description
Process Name:	Verify user detail
Data in:	(1) Asset rental (2) User detail
Data out:	(1) Information approved
Process:	(1) Check and confirm user detail by compare with 'User record'.
Attachment:	(1) User detail

Table D.15. Process Specification of Process 4.2.

Items	Description
Process Name:	Check user loaning history
Data in:	(1) User information approved
Data out:	(1) Overdue or no overdue record of user
Process:	(1) Get the loaning record of that user (2) If there is 'no overdue record', then go to next step. (3) If there is 'overdue record', not allow to borrow
Attachment:	(1) Loaning record

Table D.16. Process Specification of Process 4.3.

Items	Description
Process Name:	Check if asset is available
Data in:	(1) No overdue (2) Asset detail
Data out:	(1) Asset ready for loaning
Process:	(1) Check if asset is available with asset record
Attachment:	(1) Asset record

Table D.17. Process Specification of Process 4.4.

Items	Description
Process Name:	Update asset record
Data in:	(1) Asset ready for loan (2) Return asset
Data out:	(1) Asset (2) Asset record updated
Process:	(1) Loan an asset to user (2) Update asset record
Attachment:	(1) User record (2) Asset record

Table D.18. Process Specification of Process 4.5.

Items	Description
Process Name:	Warning user
Data in:	(1) Over due asset loaning
Data out:	(1) Warning
Process:	(1) Warn the user to return the overdue asset .
Attachment:	(1) Loan record

Table D.19. Process Specification of Process 5.1.

Items	Description
Process Name:	Prepare Report
Data in:	(1) Problem Detail (2) Solution (3) User Detail (4) Asset Detail (5) Spare Part Detail (6) Supplier Detail (7) Loaning Detail
Data out:	(1) Information
Process:	(1) Retrieve the specific data from each database.
Attachment:	(1) Data from each record

Table D.20. Process Specification of Process 5.2.

Items	Description
Process Name:	Create Report
Data in:	(1) Information
Data out:	(1) Report
Process:	(1) Digest information (2) Produce report
Attachment:	(1) Report

Table D.21. Process Specification of Process 5.3.

Items	Description
Process Name:	Print Report
Data in:	(1) Report
Data out:	(1) Report (Hard copy)
Process:	(1) Print out report and present to the management level
Attachment:	(1) Report

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APPENDIX E

DATABASE DEFINITIONS

Table E.1. Entity Definitions of HelpDesk.

Entinty Name	Definition
ASSET	The detail of an asset.
ASSET_TYPE	Look up table for the asset type.
USER	The employee who has a problem with their asset.
DEPARTMENT	A Department is any subdivision of your Company. All internal Users must be assigned to a Department for reporting purposes.
LOAN	The history of loaning equipment.
PERSON	The employee who works for the company.
PROBLEM	A problem with an asset or while using an asset eg : a computer
PROBLEM_CATEGORY	Category of technical problem which is involved with an asset.
PROBLEM_SPARE_PART	The spare part inventory which is used for the technical work.
PROBLEM_STATUS	The progress of a problem.

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Table E.2. Entity Definitions of HelpDesk.

Entinty Name	Definition
PROBLEM_TYPE	Look up table for the problem type.
SPARE_PART	The spare part detail.
TECHNICIAN	The employee who works in Ed-Tech Department and solved the problems or all request which come from the user.

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Table E.3. Attribute Definitions of Helpdesk.

Atribute Name	Pk	Fk	Definition	Domain	Datatype
ASSET					
asset_id	Yes	No	A unique number of anything of material value or userfulness	Number	Number
asset_type	No	Yes	Code for the type of asset 1 = PC Notebook 2 = Macintosh notebook 3 = Projector	Number	Number
serial_no	No	No	The original asset number from the factory	Number	Number
room_no	No	No	The number of room that person locate in	Number	Number
school	No	No	One of : Elementary school Middle school High school	String	Varchar2 (20)

Table E.4. Attribute Definitions of Helpdesk.

Atribute Name	Pk	Fk	Definition	Domain	Datatype
ASSET_TYPE					
asset_type	Yes	No	Code for the type of asset 1 = PC Notebook 2 = Macintosh notebook 3 = Projector 4 = PC desktop 5 = Micintosh desktop 6 = TV signal converter (Averkey) 7 = Printer 8 = Hub	Number	Number
Description	No	No	The asset type detail	String	Varchar2 (20)

Table E.5. Attribute Definitions of Helpdesk.

Atribute Name	Pk	Fk	Definition	Domain	Datatype
USER					
personal_id	Yes	Yes	The ID assigned to the person by the Personnel Department	Number	Number
DEPARTMENT					
department_id	Yes	No	The identifier of specialized division of a large organization	Department_id	Varchar2 (20)
name	No	No	Department name	String	Varchar2 (20)
LOAN					
asset_id	Yes	Yes	A unique number of anything of material value or usefulness	Number	Number
personal_id	Yes	Yes	The ID assigned to the person by the Personnel Department	Number	Number
LOAN					
start_date	Yes	No	Loaning date	Datetime	Date
expected_end_date	No	No	The return date that the user should the asset	Datetime	Date
actual_end_datae	No	No	The real date that the user should return the asset	Datetime	Date

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Table E.6. Attribute Definitions of Helpdesk.

Atribute Name	Pk	Fk	Definition	Domain	Datatype
PERSON					
person_id	Yes	No	The ID assigned to the person by the Personnel Department	Number	Number
department_id	No	Yes	The identifier of specialized division of a large organization	Department_id	Varchar2 (20)
first_name	No	No	The name that procedes the surname	String	Varchar2 (20)
surname	No	No	family name	String	Varchar2 (20)
position	No	No	A job in an organization or hierarchy	String	Varchar2 (20)
room_no	No	No	The number of room that person locate in	Number	Number
phone_extension_no	No	No	The internal telephone number	Number	Number
email_address	No	No	The electric mail address	String	Varchar2 (20)

Table E.7. Attribute Definitions of Helpdesk.

Atribute Name	Pk	Fk	Definition	Domain	Datatype
PROBLEM					
asset_id	Yes	Yes	A unique number of anything of material value or usefulness	Number	Number
notified_datetime	Yes	No	Date and Time when the problems occurs	Datetime	Date
user	Yes	Yes	Someone who has a problem and need help on the computer	Number	Number
problem_category	No	Yes	Code for the category of problem (defined by the user) 1 = Computer 2 = Printer 3 = Averkey 4 = Network	Number	Number
problem_status	No	Yes	Code for the status of the problem 1 = user has notified the problem to the helpdesk, but no one assigned to fix it yet (waiting in queue) 2 = problem assigned to technician; not yet solved 3 = problem solved ; spare part required 4 = problem complete 5 = problem cancelled	String	Varchar2 (20)

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Table E.8.　Attribute Definitions of Helpdesk.

Atribute Name	Pk	Fk	Definition	Domain	Datatype
PROBLEM (Continued)					
problem_description	No	No	Description of the problem by the user	String	Varchar2 (20)
technician	No	Yes	Person assigned to fix the problem	Number	Number
diagnosed_problem_type	No	Yes	Code for the type of problem 1 = Email 2 = Application : MS office, ClarisWork, Adobe etc. 3 = Hardware 4 = Internet 5 = Network	Number	Number
diagnosis	No	No	Description of what caused the problem	String	Varchar2 (20)
solution	No	No	Method for solving the problem	String	Varchar2 (20)
completed_date	No	No	Date the user is happy that the problem is fixed	Datetime	Date

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Table E.9. Attribute Definitions of Helpdesk.

Atribute Name	Pk	Fk	Definition	Domain	Datatype
PROBLEM_CATEGORY					
problem_category	Yes	No	Code for category of problem 1 = Computer 2 = Printer 3 = Averkey 4 = Network	Number	Number
description	No	No	The detail of problem category	String	Varchar2 (20)
PROBLEM_SPARE_PART					
notified_datetime	Yes	Yes	The date and time that the technician requires the spare part	Datetime	Date
asset_id	Yes	Yes	A unique number of anything of material value or usefulness	Number	Number
user	Yes	Yes	Person who notified the problem	Number	Number
spare_item_id	Yes	Yes	The unique number of spare_part	Number	Number

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Table E.10. Attribute Definitions of Helpdesk.

Atribute Name	Pk	Fk	Definition	Domain	Datatype
PROBLEM_STATUS					
problem_status	Yes	No	Code for the status of the problem 1 = user has notified the problem to the helpdesk, but no one assigned to fix it yet (waiting in queue) 2 = problem assigned to technician; not yet solved 3 = problem solved ; spare part required 4 = problem complet 5 = problem cancelled	String	Varchar2 (20)
description	No	No	The problem detail	String	Varchar2 (20)

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Table E.11. Attribute Definitions of Helpdesk.

Atribute Name	Pk	Fk	Definition	Domain	Datatype
PROBLEM_TYPE					
problem_type	Yes	No	Code for the type of problem 1 = Email 2 = Application : MS office, ClarisWork, Adobe etc. 3 = Hardware 4 = Internet 5 = Network	Number	Number
problem_category	No	Yes	Code for category of problem 1 = Computer 2 = Printer 3 = Averkey 4 = Network	Number	Number
description	No	No	The problem detail	String	Varchar2 (20)

Table E.12. Attribute Definitions of Helpdesk.

Atribute Name	Pk	Fk	Definition	Domain	Datatype
SPARE_PART					
spare_item_id	Yes	No	The unique number of spare_part	Number	Number
compay	No	Yes	The company who supplie a spare part	String	Varchar2 (20)
description	No	No	The spare part detail	String	Varchar2 (20)
quantity_in_stock	No	No	The amount of spare part in stock	Number	Number
SUPPLIER					
company	Yes	No	The company who supplie a spare part	String	Varchar2 (20)
person_name	No	No	The name of person in the supplier company which we need to contact.	String	Varchar2 (20)
position	No	No	The job in the supplier organization or hierarchy	String	Varchar2 (20)
telephone_no	No	No	Supplier telephone number	Number	Number
address	No	No	The detail of supplier address	String	Varchar2 (20)
Email_address	No	No	Electronic mail of supplier	String	Varchar2 (20)
TECHNICIAN					
personal_id	Yes	Yes	The ID assigned to the person by the Personnel Department	Number	Number

APPENDIX   F

USER MANUAL AND WEB INTERFACE DESIGN

USER MANUAL AND WEB INTERFACE

Accessing the Web Interface

To access via the Web Interface, follow these steps:

(1) Start your Internet browser (Microsoft Internet Explorer or Netscape

Navigator version 4.0 up)

(2) Go to the web page URL : intra

(3) Click at 'HelpDesk' button as Figure F.1.

Figure F.1.   Intra Home Page.

66

Logging On

(1) Type in your User Name – as assigned by Help Desk administrator

(2) Press TAB or use the mouse to move to the Password field

(3) Type in your password and click on 'Login'

Figure F.2. Log in.

Notes

The Web Interface does not offer a Select User screen. In order to log on, you must know the exact spelling of your User name.

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Web Interface – Request Form

After the user completes the request form (Figure F.3), the user will get the confirmation from the HelpDesk System which attached the Request Number (Figure F.4).

Figure F.3.   Request Form for Non-Privilege User.
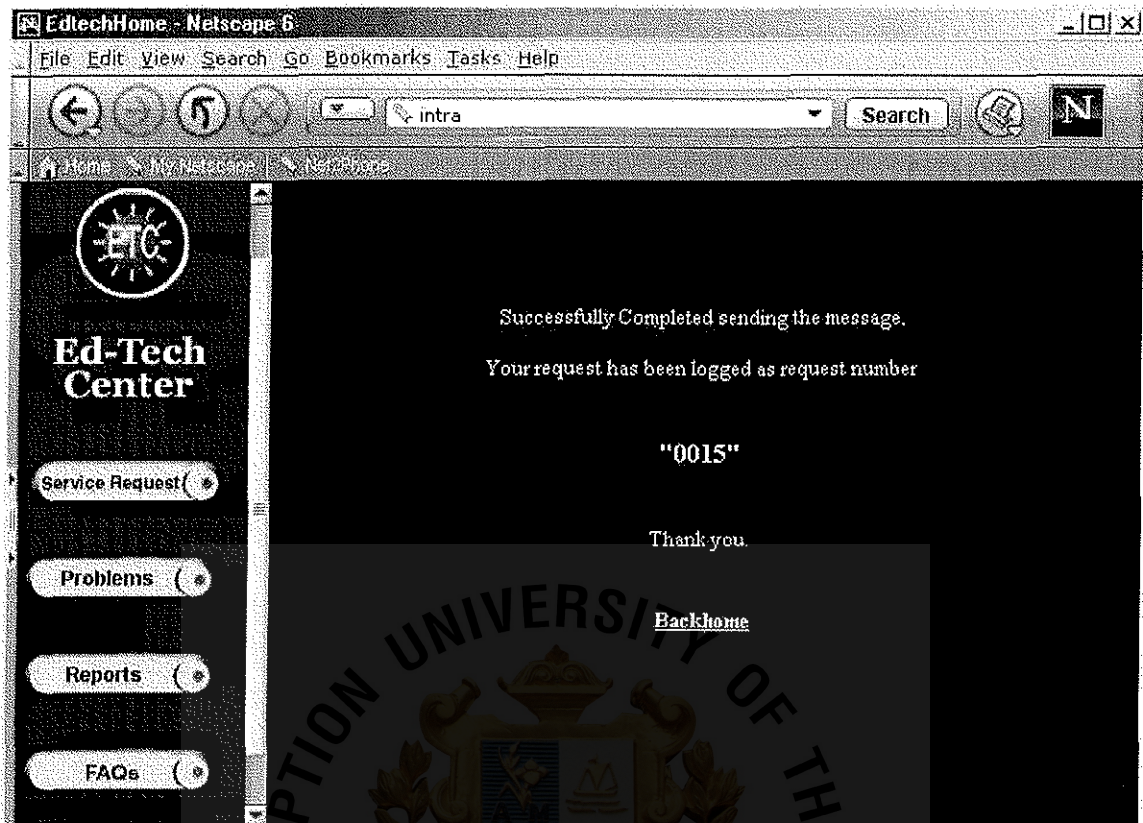
Figure F.4.   Request Confirmation with Request Number (or Job Number).

Note

But for the Privileged User will see the request as Figure F.3 and see more option

as the below figure (Figure F.5).

III. ACTION (ED-TECH STAFF ONLY)   Date : 09-07-01

ACKNOWLEDGEMENT   ○ Phone   ⊙ E-mail

                  ○ TSA   ○ Others

BY   □ Thawat   □ Phusit   □ Thitaphong   □ Suwanna   □ Bill

          □ Sriyuda   □ Rachain   □ Sirijporn   □ Chidpong   ☑ Oie

STATUS   ○ Done   ○ Sendto repair

Solution :

- Reboot the computer with 'Norton Utility'
  CD.
- Use 'Norton Disk Doctor' option to fix the
  error.

SEND   CANCEL

Figure F.5.   More Option of Request Form for Privilege User.

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Figure F.6.   List of Problems.

See List of Problems

1.   Click at 'Problem' icon at your left hand side and the problem list will show

up.

Searching for Solutions Over the Web Interface

1.   Click on 'FAQ' button on your left hand side. And the window as Figure

F.7. will show up.
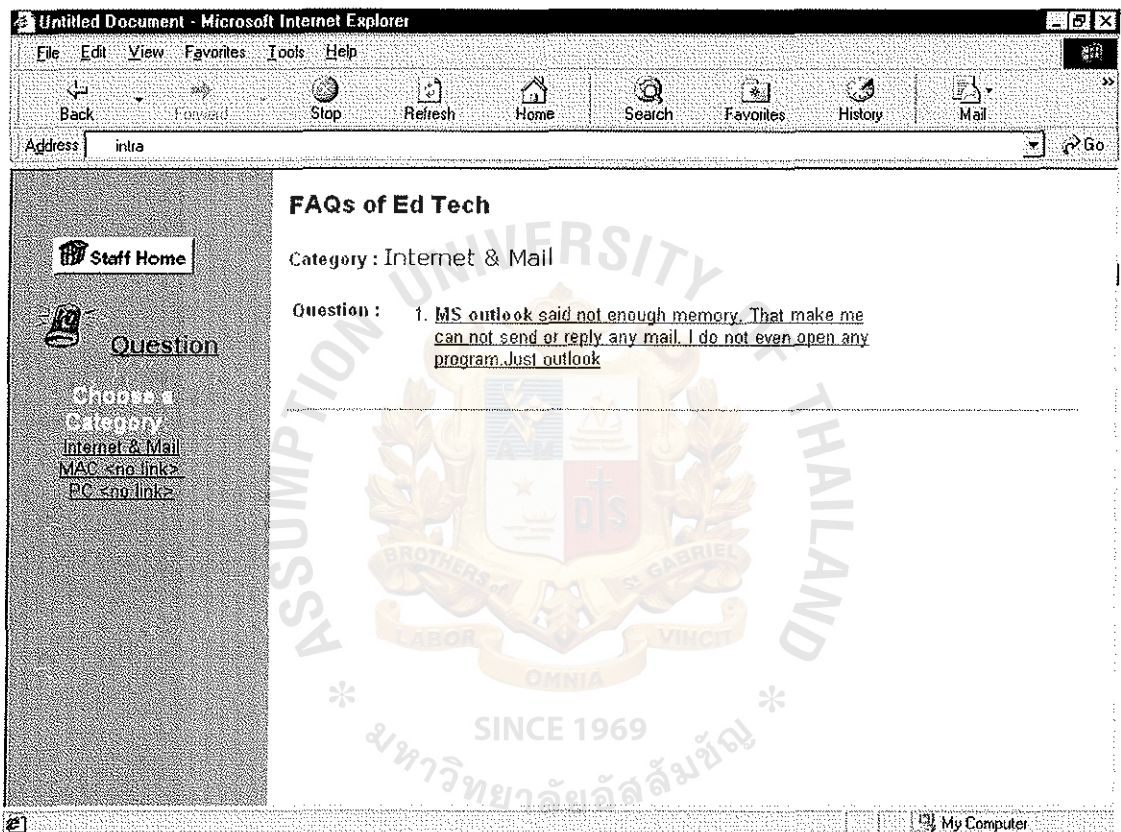
Figure F.7.   Solution List.

2.   If you still can't find your solution from the list, you can also add your own

question by clicking on 'Question' button. And the question window will

show up.

2.   Enter the detail of your question and click 'Submit'.   After 'Submit', the

page confirmation will show up. This page will let you know that your

72

question or your request was sent to the system. And you can come back to
the first page (log on page) by clicking at 'Back home' at the end of this
page.

Figure F.8.   Question Form.

Note

You can also clear your question by clicking at 'Clear form'.

APPENDIX   G

SOURCE CODES

INDEX

```html
<!doctype html public "-//w3c//dtd html 4.0 transitional//en">
<html>
<head>
   <meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1">
   <meta name="GENERATOR" content="Mozilla/4.7 [en] (WinNT; I) [Netscape]">
   <title>ISB Intranet Homepage</title>
   <base target="_top">
<link href="../isb.css" rel="stylesheet" type="text/css">
</head>
<body link="#FFFFFF" vlink="#FC9900" alink="#FFFF00" onload="startclock()">
<script language="JavaScript">
<!-- Hide from old browsers


var timerID = null;
var timerRunning = false;
var id,pause=0,position=0;
function MakeArray(size)
{
this.length = size;
for(var i = 1; i <= size; i++)
{
this[i] = "";
}
return this;
```

```javascript
}
function stopclock (){
    if(timerRunning)
        clearTimeout(timerID);
    timerRunning = false;
}
function showdate () {
    var now = new Date();
                var year = now.getYear();
                var month = now.getMonth() + 1;
                var date = now.getDate();
                var hours = now.getHours();
                var minutes = now.getMinutes();
                var seconds = now.getSeconds();
                var day = now.getDay();
            var dataValue = "";
                Day = new MakeArray(7);
                Day[0]="SUN";
                Day[1]="MON";
                Day[2]="TUE";
                Day[3]="WED";
                Day[4]="THU";
                Day[5]="FRI";
                Day[6]="SAT";
```

```
                        MONTH = new MakeArray(12);

                        MONTH[0]="Jan";

                        MONTH[1]="Feb";

                        MONTH[2]="Mar";

                        MONTH[3]="Apr";

                        MONTH[4]="May";

                        MONTH[5]="Jun";

                        MONTH[6]="Jul";

                        MONTH[7]="Aug";

                        MONTH[8]="Sep";

                        MONTH[9]="Oct";

                        MONTH[10]="Nov";

                        MONTH[11]="Dec";

//              dataValue += (Day[day]) + " ";
        dataValue += MONTH[month - 1] + " " + date + ", " + year + "    ";
    document.write(dataValue)
}


function showtime () {
    var now = new Date();

    var hours = now.getHours();

    var minutes = now.getMinutes();

    var seconds = now.getSeconds()

        var timeValue = "";
```

```
        var timeValue = "" + hours

        timeValue += ((minutes < 10) ? ":0" : ":") + minutes

        timeValue += ((seconds < 10) ? ":0" : ":") + seconds

        // timeValue += (hours >= 12) ? " P.M." : " A.M."

        document.clock.face.value = timeValue;

                timerID = setTimeout("showtime()",1000);

        timerRunning = true;

}
function startclock () {

        stopclock();

        showtime();

}


function popBox(title, width, height, page){

        popbox=window.open(page,title,"toolbar=no,scrollbars=yes,directories=no,men

ubar=no,resizeable=yes,width="+width+",height="+height);

        if(popbox !=null){

                if (popbox.opener==null){

                        popbox.opener=self;

                        popbox.getFocus();

                }

        }

        return false;

}
// --End Hiding Here -->
```

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```
</script>

<table BORDER=0 CELLSPACING=0 CELLPADDING=0 >

<tr>

<td COLSPAN="5"><img SRC="main01_2.gif" height=57 width=596></td>

</tr>


<tr>

<td COLSPAN="5">

<table BORDER=0 CELLSPACING=0 CELLPADDING=0 WIDTH="596" >

<tr>

<td><img SRC="main02.gif" height=21 width=128><img SRC="main03_1.gif"

height=21 width=270><img SRC="main04.gif" height=21 width=39></td>


<td ROWSPAN="2"><img SRC="main08_1.gif" height=41 width=159></td>

</tr>


<tr>

<td><img SRC="main05.gif" height=20 width=128><img SRC="ani1.gif" height=20

width=270><img SRC="main07.gif" height=20 width=39></td>

</tr>

</table>

</td>

</tr>
```

78

```html
<tr>

<td COLSPAN="5">

<table BORDER=0 CELLSPACING=0 CELLPADDING=0 WIDTH="596" >

<tr>

<td><img SRC="main09.gif" height=10 width=596></td>

</tr>

</table>

</td>

</tr>


<tr>

<td ALIGN=LEFT VALIGN=TOP COLSPAN="5">

<table BORDER=0 CELLSPACING=0 CELLPADDING=0 >

<tr>

<td VALIGN=TOP WIDTH="17" BGCOLOR="#FFFFFF"> </td>


<td VALIGN=TOP WIDTH="285" BGCOLOR="#003366"><img

SRC="main11_2.gif" height=199 width=285></td>


<td ALIGN=LEFT VALIGN=TOP WIDTH="279" BGCOLOR="#003366">

<div class="dateBlock"><form method="get" name="clock">Date : <span

class="dateBlock"><script language="JavaScript">

<!--

showdate();
```

// -->

</script>

Time: <input type="text" size="8" name="face"></form></div>

<div class="dateBlock">

High School

Middle School

Elementary School

Main Library

Advancement Office

Activities Office


```html
<a href="http://intra/isb/athletics/index.html">Athletics Office</a></li>

<li>
<a href="http://intra/isb/health/health.htm">Health Center</a></li>

<li>
<a href="http://intra/isb/Transport/index.html">Transportation Office</a></li>
</ul>
</div>
</td>

<td WIDTH="15" BGCOLOR="#FFFFFF"> </td>
</tr>
</table>
</td>
</tr>

<tr>
<td COLSPAN="5">
<table BORDER=0 CELLSPACING=0 CELLPADDING=0 WIDTH="596" >
<tr>
<td VALIGN=TOP WIDTH="17" BGCOLOR="#FFFFFF"> </td>

<td WIDTH="38" BGCOLOR="#003366"> </td>
```

```
<td><img SRC="main30.gif" BORDER=0 height=84 width=66></td>

<td WIDTH="36" BGCOLOR="#003366"> </td>

<td><a href="http://www.isb.ac.th/"><img SRC="main31.gif" BORDER=0 height=84
width=80></a></td>

<td WIDTH="39" BGCOLOR="#003366"> </td>

<td BGCOLOR="#003366"><a href="http://intra/isb/home/" onClick="return
popBox('Mail',400,450,'/servlet/FAQsPublicServlet?module=com.netplus.project.MailF
orm&mailTo=boonlarp@isb.ac.th');"><img SRC="main32.gif" BORDER=0 height=84
width=99></a></td>

<td WIDTH="40" BGCOLOR="#003366"> </td>

<td><a href="certified.html"><img SRC="main34.gif" BORDER=0 height=84
width=121></a></td>

<td VALIGN=TOP WIDTH="45" BGCOLOR="#003366"> </td>

<td VALIGN=TOP WIDTH="15" BGCOLOR="#FFFFFF"> </td>
</tr>
</table>
</td>
```

```
</tr>


<tr>

<td COLSPAN="5">

<table BORDER=0 CELLSPACING=0 CELLPADDING=0 >

<tr>

<td WIDTH="17" BGCOLOR="#FFFFFF"> </td>


<td WIDTH="10" BGCOLOR="#003366"><font

color="#FFFFFF"> </font></td>


<td WIDTH="554" BGCOLOR="#003366">

<div class="dateBlock"><font color="#FFFFFF">If you have any questions

or comments about ISB intranet, please contact</font><a href="EdtechHome.html"

onClick="return

popBox('Mail',400,450,'/servlet/FAQsPublicServlet?module=com.netplus.project.MailF

orm&mailTo=jeep@isb.ac.th');">

Ed-Tech Center</a></div>

</td>


<td WIDTH="15" BGCOLOR="#FFFFFF"> </td>

</tr>

</table>

</td>

</tr>
```

```
<tr>

<td COLSPAN="5"><img SRC="main25.gif" height=30 width=596></td>

</tr>

</table>


</body>

</html>
```

Confirmation

```html
<!doctype html public "-//w3c//dtd html 4.0 transitional//en">
<html>
<head>
  <meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1">
  <meta name="Author" content="Oie">
  <meta name="GENERATOR" content="Mozilla/4.7 [en] (WinNT; I) [Netscape]">
  <title>request_complete</title>
</head>
<body>

<center><font face="Arial,Helvetica"><font color="#3333FF">Successfully
Completed sending the message.</font></font>
<p><font face="Arial,Helvetica"><font color="#3333FF">Thank you.</font></font>
<p><font face="Arial,Helvetica"><font color="#3333FF"><a
href="EdtechHome.html">ok</a></font></font></center>

<br> 
</body>
</html>
```

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REQUEST FORM

```
<HTML>

<HEAD>

  <META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-
1">

  <META NAME="GENERATOR" CONTENT="Mozilla/4.05 [en] (Win95; I)
[Netscape]">

  <TITLE>Service Request Form</TITLE>

<STYLE type="text/css">

<!--

td {  font-family: Arial, Helvetica, sans-serif; font-size:9pt; font-weight:normal}

.HEAD {  font-family: "Times New Roman", Times, serif; font-size:14pt; font-weight:
bold}

.BOLD {  font-family: Arial, Helvetica, sans-serif; font-size: 9pt; font-weight: bold}

-->

</STYLE>

</HEAD>

<BODY BGCOLOR="#FFFFFF">

 

<TABLE BORDER=0 CELLSPACING=0 CELLPADDING=0 WIDTH="500" >

<TR>

<TD WIDTH="398"><IMG SRC="servicehead.jpg" ALT="Service Request"

BORDER=0 id="Picture58" HEIGHT=37 WIDTH=445></TD>
```

```
<TD WIDTH="10"> </TD>


<TD WIDTH="103"><A HREF="index.html" target="_top"><IMG

SRC="staffhome.gif" ALT="Staff Home" BORDER=0 id="Picture59" HEIGHT=27

WIDTH=102></A></TD>

</TR>


<TR>

<TD WIDTH="398"> </TD>


<TD WIDTH="10"> </TD>


<TD WIDTH="103"> </TD>

</TR>

</TABLE>

 

<TABLE BORDER=0 WIDTH="500" >

<TR>

<TD HEIGHT="98" BGCOLOR="#CCFFCC"><TT><FONT FACE="Courier

New,Courier">If

you have any technology equipment problems, please fill in the form below.

Then click the send button. </FONT></TT> 


<P><TT><FONT FACE="Courier New,Courier">We will acknowledge your request

within a day and work on problem resolution ASAP. (Request after 2:30 p.m.
```

will be acknowledged the next working day</FONT></TT>.)</TD>

</TR>

<TR>

<TD> </TD>

</TR>

</TABLE>

<TABLE BORDER=0 WIDTH="500" >

<TR>

<TD><IMG SRC="reqform.gif" ALT="Service Request Form" BORDER=0

id="Picture62" HEIGHT=20 WIDTH=228 ALIGN=CENTER></TD>

<TD><IMG SRC="siren.gif" ALT="siren" BORDER=0 id="Picture39" HEIGHT=39

WIDTH=61></TD>

</TR>

</TABLE>

<FORM name=frm method="post" action="/servlet/StaffServlet"><INPUT

type="hidden" name="module" value="com.netplus.isb.edtech.ServiceRequestETC">

<TABLE BORDER=0 WIDTH="504" BGCOLOR="#FFFFCC" >

<TR>

<TD>

<TABLE BORDER=0 WIDTH="500" >

<TR>

```html
<TD WIDTH="303">DATE : <INPUT type="text" name="reqDate"

maxlength="20" size="20"></TD>


<TD WIDTH="187" class="BOLD">SCHOOL ITEM ONLY</TD>

</TR>

</TABLE>

<SPAN class="HEAD">I. CONTACT</SPAN> 

<TABLE BORDER=0 CELLPADDING=0 WIDTH="500" >

<TR>

<TD WIDTH="63">TYPE </TD>


<TD WIDTH="57"><INPUT type="radio" name="conType" value="ES">ES</TD>


<TD WIDTH="54"><INPUT type="radio" name="conType" value="MS">MS</TD>


<TD WIDTH="52"><INPUT type="radio" name="conType" value="HS">HS</TD>


<TD WIDTH="282"><INPUT type="radio" name="conType"

value="Office">Office<INPUT type="TEXT" name="conOff" size="30"

maxlength="30"></TD>

</TR>

</TABLE>

 

<TABLE BORDER=0 CELLPADDING=0 WIDTH="500" >

<TR>
```

```html
<TD WIDTH="292">NAME :<INPUT type="TEXT" name="conName" size="30"
maxlength="30"></TD>


<TD WIDTH="217">EXT :<INPUT type="TEXT" name="conExt" size="20"
maxlength="20"></TD>
</TR>
</TABLE>
 
<TABLE BORDER=0 CELLPADDING=0 WIDTH="500" >
<TR>
<TD WIDTH="225">ROOM NO :<INPUT type="TEXT" name="conRoom" size="20"
maxlength="20"></TD>


<TD WIDTH="270"><FONT FACE="Arial, Helvetica, sans-serif">AVAILABLE
TIME
:</FONT><INPUT type="TEXT" name="conTime" size="20" maxlength="20"></TD>
</TR>
</TABLE>
 </TD>
</TR>
</TABLE>
 
<TABLE BORDER=0 WIDTH="500" >
<TR>
```

```html
<TD BGCOLOR="#99CCCC"><SPAN class="HEAD"><B><FONT SIZE=+1>II.

SERVICE</SPAN></FONT></B> 

<TABLE BORDER=0 WIDTH="500" >

<TR>

<TD WIDTH="86">MACHINE</TD>


<TD WIDTH="78"><INPUT type="radio" name="serMachine"

value="Apple">Apple</TD>


<TD WIDTH="344"><INPUT type="radio" name="serMachine"

value="PC">PC</TD>

</TR>

</TABLE>

 

<TABLE BORDER=0 WIDTH="500" >

<TR>

<TD WIDTH="246">MODEL :<INPUT type="TEXT" name="serModel" size="25"

maxlength="25"></TD>


<TD WIDTH="262">SERIAL NO : <INPUT type="TEXT" name="serSerial"

size="25" maxlength="25"></TD>

</TR>

</TABLE>

 

<TABLE BORDER=0 WIDTH="500" >
```

91

```html
<TR>

<TD WIDTH="147">TYPE </TD>


<TD WIDTH="141"> </TD>


<TD WIDTH="220"> </TD>

</TR>


<TR>

<TD WIDTH="147" HEIGHT="20">

<DIV class="BOLD">(1) REPAIRING</DIV>

</TD>


<TD WIDTH="141" HEIGHT="20"> </TD>


<TD WIDTH="220" HEIGHT="20"> </TD>

</TR>


<TR>

<TD WIDTH="147"><INPUT type="radio" name="typeRep"

value="Hardware">Hardware</TD>


<TD WIDTH="141"><INPUT type="radio" name="typeRep"

value="Software">Software</TD>
```

```
<TD WIDTH="220"><INPUT type="radio" name="typeRep"

value="Printer">Printer</TD>

</TR>


<TR>

<TD WIDTH="147"><INPUT type="radio" name="typeRep"

value="Diskette">Diskette</TD>


<TD WIDTH="141"><INPUT type="radio" name="typeRep" value="EMail">E-

mail</TD>


<TD WIDTH="220"><INPUT type="radio" name="typeRep"

value="Network/Server">Network/Server </TD>

</TR>


<TR>

<TD WIDTH="147"><INPUT type="radio" name="typeRep"

value="Accessories">Accessories </TD>


<TD COLSPAN="2"><INPUT type="radio" name="typeRep"

value="Others">Others <INPUT type="TEXT" name="RepOther" size="35"

maxlength="35"></TD>

</TR>

</TABLE>

 
```

```html
<TABLE BORDER=0 WIDTH="500" >

<TR>

<TD></TD>


<TD WIDTH="257" class="BOLD">(2) LOANING</TD>


<TD WIDTH="251"> </TD>

</TR>


<TR>

<TD WIDTH="257">Borrow Date: <INPUT type="TEXT" name="loanBorrow"

size="20" maxlength="20"></TD>


<TD WIDTH="251">Return Date: <INPUT type="TEXT" name="loanReturn"

size="20" maxlength="20"></TD>

</TR>


<TR>

<TD COLSPAN="2" WIDTH="257">Location : <INPUT type="TEXT"

name="loanLocation" size="50" maxlength="50"></TD>

</TR>

</TABLE>

 

<TABLE BORDER=0 WIDTH="500" >

<TR>
```

```html
<TD WIDTH="145"><INPUT type="radio" name="loanType"

value="Hardware">Hardware </TD>


<TD WIDTH="363"><INPUT type="radio" name="loanType"

value="Others">Others <INPUT type="TEXT" name="loanOther" size="40"

maxlength="40"></TD>

</TR>

</TABLE>

 

<TABLE BORDER=0 WIDTH="500" >

<TR>

<TD VALIGN=TOP>Note :</TD>


<TD><TEXTAREA name="loanNote" rows="5" cols="43"></TEXTAREA></TD>

</TR>

</TABLE>

 

<TABLE BORDER=0 WIDTH="500" >

<TR>

<TD></TD>


<TD WIDTH="145"><SPAN class="BOLD">(3) <SPAN

class="BOLD">MOVING AND

SETUP</SPAN></SPAN></TD>
```

```
<TD WIDTH="363"> </TD>

</TR>


<TR>

<TD WIDTH="145"><INPUT type="radio" name="moveType"

value="Hardware">Hardware</TD>


<TD WIDTH="363"><INPUT type="radio" name="moveType"

value="Others">Others <INPUT type="TEXT" name="moveOther" size="40"

maxlength="40"></TD>

</TR>

</TABLE>

 

<TABLE BORDER=0 WIDTH="500" >

<TR>

<TD VALIGN=TOP>Note :</TD>


<TD><TEXTAREA name="moveNote" rows="5" cols="43"></TEXTAREA></TD>

</TR>

</TABLE>

 </TD>

</TR>


<TR>

<TD BGCOLOR="#CCFFCC">
```

```
<TABLE BORDER=0 CELLPADDING=0 WIDTH="500" >

<TR>

<TD WIDTH="357"><B><FONT SIZE=+0>III. ACTION (ED-TECH STAFF

ONLY)</FONT></B></TD>


<TD WIDTH="152">Date : <INPUT type="TEXT" name="text13"

size="9"></TD>

</TR>

</TABLE>

 

<TABLE BORDER=0 WIDTH="500" >

<TR>

<TD WIDTH="150">ACKNOWLEDGEMENT</TD>


<TD WIDTH="95"><INPUT type="radio" name="radiobutton"

value="radiobutton">Phone </TD>


<TD WIDTH="263"><INPUT type="radio" name="radiobutton"

value="radiobutton">E-mail </TD>

</TR>


<TR>

<TD WIDTH="150"> </TD>
```

```html
<TD WIDTH="95"><INPUT type="radio" name="radiobutton"

value="radiobutton">TSA </TD>


<TD WIDTH="263"><INPUT type="radio" name="radiobutton"

value="radiobutton">Others <INPUT type="TEXT" name="text14" size="17"

maxlength="30"></TD>

</TR>

</TABLE>

 

<TABLE BORDER=0 WIDTH="500" >

<TR>

<TD WIDTH="69">BY</TD>


<TD WIDTH="93"><INPUT type="checkbox" name="checkbox"

value="checkbox">Thawat</TD>


<TD WIDTH="89"><INPUT type="checkbox" name="checkbox2"

value="checkbox">Phusit </TD>


<TD WIDTH="101"><INPUT type="checkbox" name="checkbox3"

value="checkbox">Thitaphong </TD>


<TD WIDTH="97"><INPUT type="checkbox" name="checkbox7"

value="checkbox">Suwanna </TD>
```

```html
<TD WIDTH="58"><INPUT type="checkbox" name="checkbox9"
value="checkbox">Bill </TD>
</TR>


<TR>
<TD WIDTH="69"> </TD>


<TD WIDTH="93"><INPUT type="checkbox" name="checkbox4"
value="checkbox">Sriyuda</TD>


<TD WIDTH="89"><INPUT type="checkbox" name="checkbox5"
value="checkbox">Rachain </TD>


<TD WIDTH="101"><INPUT type="checkbox" name="checkbox6"
value="checkbox">Sirijporn</TD>


<TD WIDTH="97"><INPUT type="checkbox" name="checkbox8"
value="checkbox">Chidpong </TD>


<TD WIDTH="58"> <INPUT type="checkbox" name="checkbox8"
value="checkbox">Oie</TD>
</TR>


<TR>
<TD WIDTH="69">STATUS</TD>
```

```html
<TD WIDTH="93"><INPUT type="radio" name="radiobutton"

value="radiobutton">Done </TD>


<TD COLSPAN="4"><INPUT type="radio" name="radiobutton"

value="radiobutton">Send

to repair</TD>

</TR>

</TABLE>

 

<TABLE BORDER=0 WIDTH="500" >

<TR>

<TD VALIGN=TOP>Note :</TD>


<TD><TEXTAREA name="text9" rows="4" cols="43"></TEXTAREA></TD>

</TR>

</TABLE>

 </TD>

</TR>

</TABLE>

 

<TABLE BORDER=0 WIDTH="500" >

<TR>

<TD WIDTH="216">
```

```html
<DIV ALIGN=right><A HREF="request_complete1.html"><IMG SRC="send.gif"
ALT="send" BORDER=0 id="Picture60" HEIGHT=23 WIDTH=70></A></DIV>
</TD>

<TD WIDTH="59"> </TD>

<TD WIDTH="225"><A HREF="JavaScript:document.frm.reset()"><IMG
SRC="cancel.gif" ALT="cancel" BORDER=0 id="Picture61" HEIGHT=23
WIDTH=70></A></TD>
</TR>
</TABLE>
 
<TABLE BORDER=0 WIDTH="500" >
<TR>
<TD></TD>
</TR>
</TABLE>
</FORM>
</BODY>
</HTML>
```

REQUEST NUMBER CONFIRMATION

```html
<!doctype html public "-//w3c//dtd html 4.0 transitional//en">
<html>
<head>
   <meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1">
   <meta name="Author" content="Oie">
   <meta name="GENERATOR" content="Mozilla/4.7 [en] (WinNT; I) [Netscape]">
   <title>request_complete</title>
</head>
<body text="#000000" bgcolor="#999999" link="#0000EE" vlink="#551A8B"
alink="#FF0000">

<center><b><font face="Moderne"><font color="#FFFFFF">Successfully Completed
sending the message.</font></font></b><b><font face="Arial,Helvetica"><font
color="#FFFFFF"></font></font></b>
<p><b><font face="Moderne"><font color="#FFFFFF">Your request has been
logged as request number</font></font></b><b><font face="Moderne"><font
color="#FFFFFF"></font></font></b>
<p><b><blink><font face="Moderne"><font
color="#FFFFFF">0015</font></font></blink></b><b><font face="Moderne"><font
color="#FFFFFF"></font></font></b>
<p><b><font face="Moderne"><font color="#FFFFFF">Thank
you.</font></font></b></center>
```

```html
<br> 

<br> 

<br>

<br>

</body>

</html>
```

Verify ID & Password

.

```
<HTML>

<HEAD>

    <META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-1">

    <META NAME="Author" CONTENT="Chien">

    <META NAME="GENERATOR" CONTENT="Mozilla/4.05 [en] (Win95; I)
[Netscape]">

    <TITLE>Certified</TITLE>

</HEAD>

<BODY TEXT="#000000" BGCOLOR="#FFFFFF" LINK="#0000FF"

VLINK="#990000" topmargin="0" leftmargin="0" marginwidth="0"

marginheight="0">

 

<TABLE BORDER=0 CELLSPACING=0 CELLPADDING=0 WIDTH="652" >

<TR>

<TD VALIGN=TOP COLSPAN="3" WIDTH="216" HEIGHT="114"><IMG

SRC="certihead.gif" ALT="Certified & Classifed Staff Only" id="Picture1"

HEIGHT=114 WIDTH=216></TD>


<TD VALIGN=TOP COLSPAN="8"> </TD>

</TR>
```

```
<TR>

<TD VALIGN=TOP WIDTH="133" HEIGHT="14"><IMG SRC="clearpixel.gif"
HEIGHT=1 WIDTH=133></TD>


<TD VALIGN=TOP WIDTH="48"><IMG SRC="clearpixel.gif" HEIGHT=1
WIDTH=48></TD>


<TD VALIGN=TOP WIDTH="35"><IMG SRC="clearpixel.gif" HEIGHT=1
WIDTH=35></TD>


<TD VALIGN=TOP WIDTH="5"><IMG SRC="clearpixel.gif" HEIGHT=1
WIDTH=5></TD>


<TD VALIGN=TOP WIDTH="27"><IMG SRC="clearpixel.gif" HEIGHT=1
WIDTH=27></TD>


<TD VALIGN=TOP> </TD>


<TD VALIGN=TOP WIDTH="113"><IMG SRC="clearpixel.gif" HEIGHT=1
WIDTH=113></TD>


<TD VALIGN=TOP> </TD>


<TD VALIGN=TOP WIDTH="33"><IMG SRC="clearpixel.gif" HEIGHT=1
WIDTH=33></TD>
```

```html
<TD VALIGN=TOP WIDTH="44"><IMG SRC="clearpixel.gif" HEIGHT=1
WIDTH=44></TD>


<TD VALIGN=TOP WIDTH="52"><IMG SRC="clearpixel.gif" HEIGHT=1
WIDTH=52></TD>
</TR>


<TR>
<TD VALIGN=TOP HEIGHT="30"> </TD>


<TD VALIGN=TOP COLSPAN="10" WIDTH="519"><IMG SRC="please2.gif"
ALT="please enter username and password" id="Picture2" HEIGHT=30
WIDTH=519></TD>
</TR>


<TR>
<TD VALIGN=TOP COLSPAN="2"> </TD>


<TD VALIGN=TOP COLSPAN="8" WIDTH="419"><FORM
    action="/servlet/StaffServlet" method="POST" name="frm"
    target="_top"><INPUT type="hidden" name="action" value="login">
<TABLE BORDER=0 CELLPADDING=2 WIDTH="419" BGCOLOR="#CCCC99"
id="Table1" >
<TR>
```

```html
<TD VALIGN=TOP WIDTH="144">

<CENTER>User Name :</CENTER>

</TD>


<TD VALIGN=TOP WIDTH="264"><INPUT

        type="text" size="33" maxlength="20"

        name="UserId"></TD>

</TR>


<TR>

<TD VALIGN=TOP WIDTH="144">

<CENTER>Password :</CENTER>

</TD>


<TD VALIGN=TOP WIDTH="264"><INPUT

        type="password" size="33" maxlength="16"

        name="Password"></TD>

</TR>

</TABLE>

</FORM></TD>


<TD VALIGN=TOP> </TD>

</TR>


<TR>
```

```
<TD VALIGN=TOP COLSPAN="11" HEIGHT="37"> </TD>

</TR>


<TR>

<TD VALIGN=TOP COLSPAN="5" HEIGHT="27"> </TD>


<TD VALIGN=TOP WIDTH="81"><A HREF="request_complete.html"

target="_top"><IMG SRC="sub2.gif" ALT="SUBMIT" BORDER=0 id="Picture3"

HEIGHT=27 WIDTH=81></A></TD>


<TD VALIGN=TOP> </TD>


<TD VALIGN=TOP WIDTH="81"><A HREF="JavaScript:document.frm.reset()"

target="_top"><IMG SRC="reset2.gif" ALT="RESET" BORDER=0 id="Picture4"

HEIGHT=27 WIDTH=81></A></TD>


<TD VALIGN=TOP COLSPAN="3"> </TD>

</TR>


<TR>

<TD VALIGN=TOP COLSPAN="11" HEIGHT="13"> </TD>

</TR>

</TABLE>

<SCRIPT language='JavaScript'>

document.frm.UserId.focus();
```

```
document.frm.Password.value=";
```

```
</SCRIPT>
```

```
</BODY>
```

```
</HTML>
```

FAQ

```html
<HTML>
<HEAD>
   <META HTTP-EQUIV="Content-Type" CONTENT="text/html; charset=iso-8859-
1">
   <META NAME="GENERATOR" CONTENT="Mozilla/4.05 [en] (Win95; I)
[Netscape]">
   <TITLE>left</TITLE>
</HEAD>
<BODY TEXT="#FFFFCC" BGCOLOR="#999900">
 
<TABLE BORDER=0 CELLSPACING=0 CELLPADDING=0 WIDTH="95%" >
<TR>
<TD HEIGHT="59">
<CENTER><A HREF="index.html" target="_top"><IMG SRC="staffhome.gif"
BORDER=0 HEIGHT=27 WIDTH=102></A></CENTER>
</TD>
</TR>


<TR>
<TD></TD>
</TR>
```

```
<TR>

<TD>

<CENTER><A HREF="question.html" target="Display"><IMG SRC="Siren.gif"

BORDER=0 HEIGHT=40 WIDTH=62 ALIGN=ABSCENTER></A><B><FONT

COLOR="#330033"><A HREF="question.html"

target="Display">Question</A></FONT></B></CENTER>

</TD>

</TR>



<TR>

<TD></TD>

</TR>



<TR>

<TD>

<CENTER> </CENTER>



<CENTER><B><FONT FACE="Arial, Helvetica, sans-serif"><FONT

COLOR="#FFFFCC">Choose

a Category:</FONT></FONT></B> </CENTER>

</TD>

</TR>



<TR>

<TD>
```

```html
<CENTER><FONT FACE="Arial, Helvetica, sans-serif"><FONT

COLOR="#FFFFCC"><FONT SIZE=-1><A HREF="Outlook.html" YES"

target="body">I</A><A HREF="Outlook.html" target="body">nternet

&amp; Mail</A></FONT></FONT></FONT></CENTER>

</TD>

</TR>


<TR>

<TD>

<CENTER><FONT FACE="Arial, Helvetica, sans-serif"><FONT

COLOR="#FFFFCC"><FONT SIZE=-1><A

HREF="/servlet/StaffServlet?module=com.netplus.faq.FaqUserDisplay&dep_id=128&

category_id=29&show_category=" YES" target="Display">MAC

&lt;no link> </A></FONT></FONT></FONT></CENTER>

</TD>

</TR>


<TR>

<TD>

<CENTER><FONT FACE="Arial, Helvetica, sans-serif"><FONT

COLOR="#FFFFCC"><FONT SIZE=-1><A

HREF="/servlet/StaffServlet?module=com.netplus.faq.FaqUserDisplay&dep_id=128&

category_id=30&show_category=" YES" target="Display">PC

&lt;no link></A></FONT></FONT></FONT></CENTER>

</TD>
```
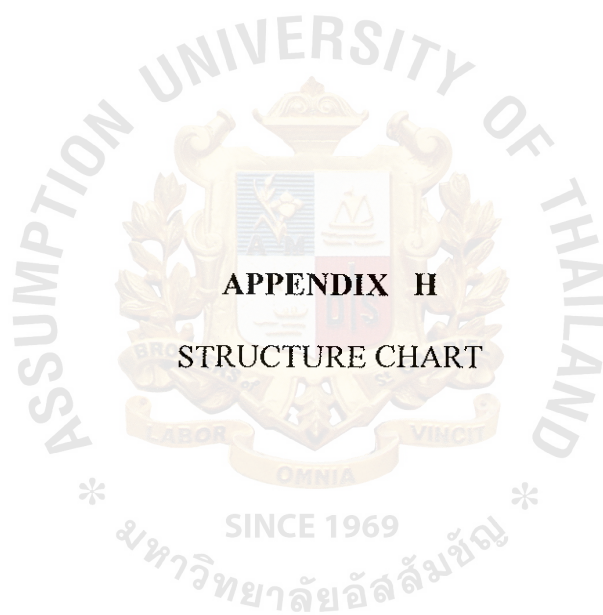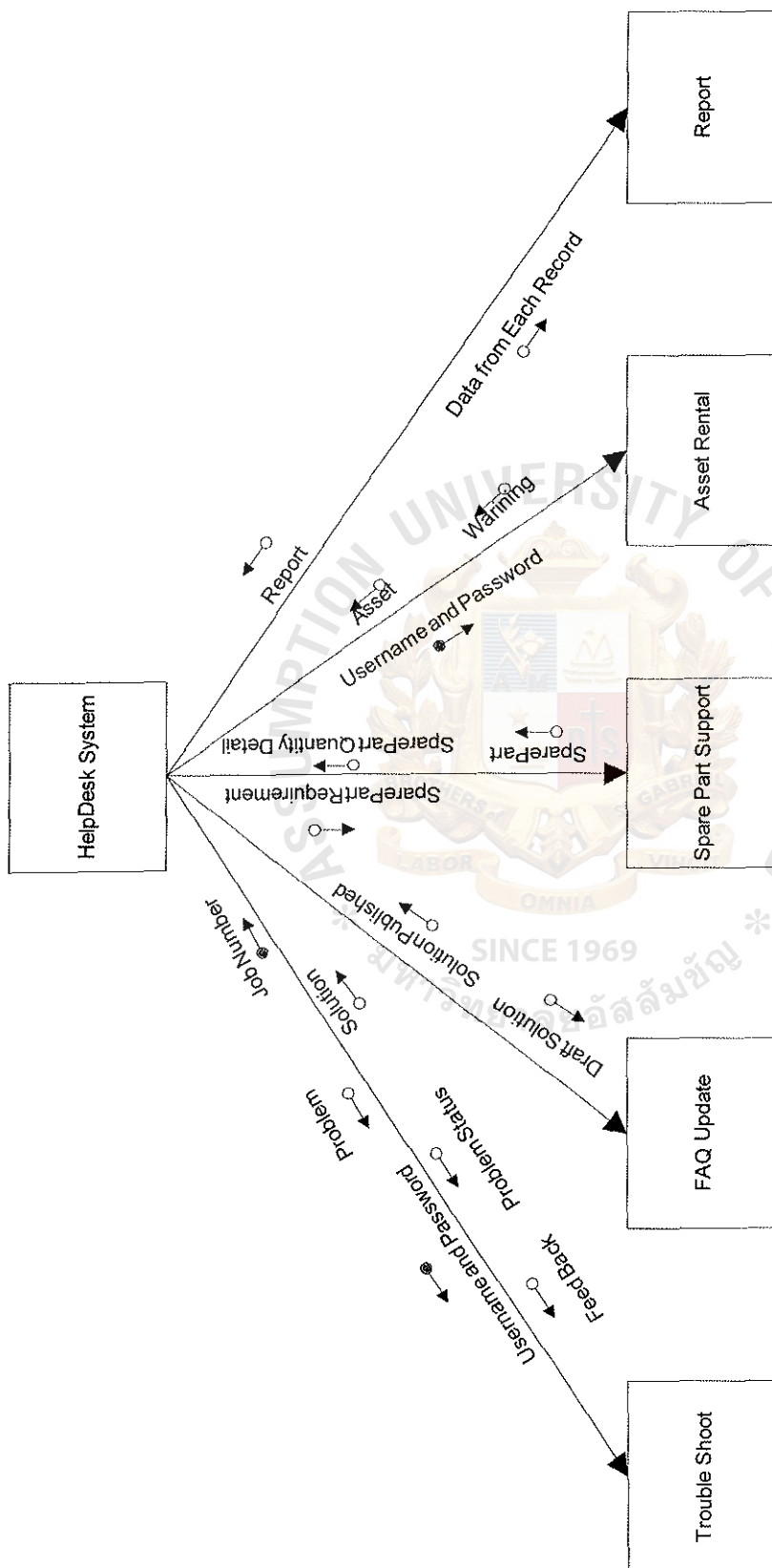
```
</TR>


<TR>

<TD HEIGHT="38"> </TD>

</TR>

</TABLE>

 

</BODY>

</HTML>
```

APPENDIX H

STRUCTURE CHART

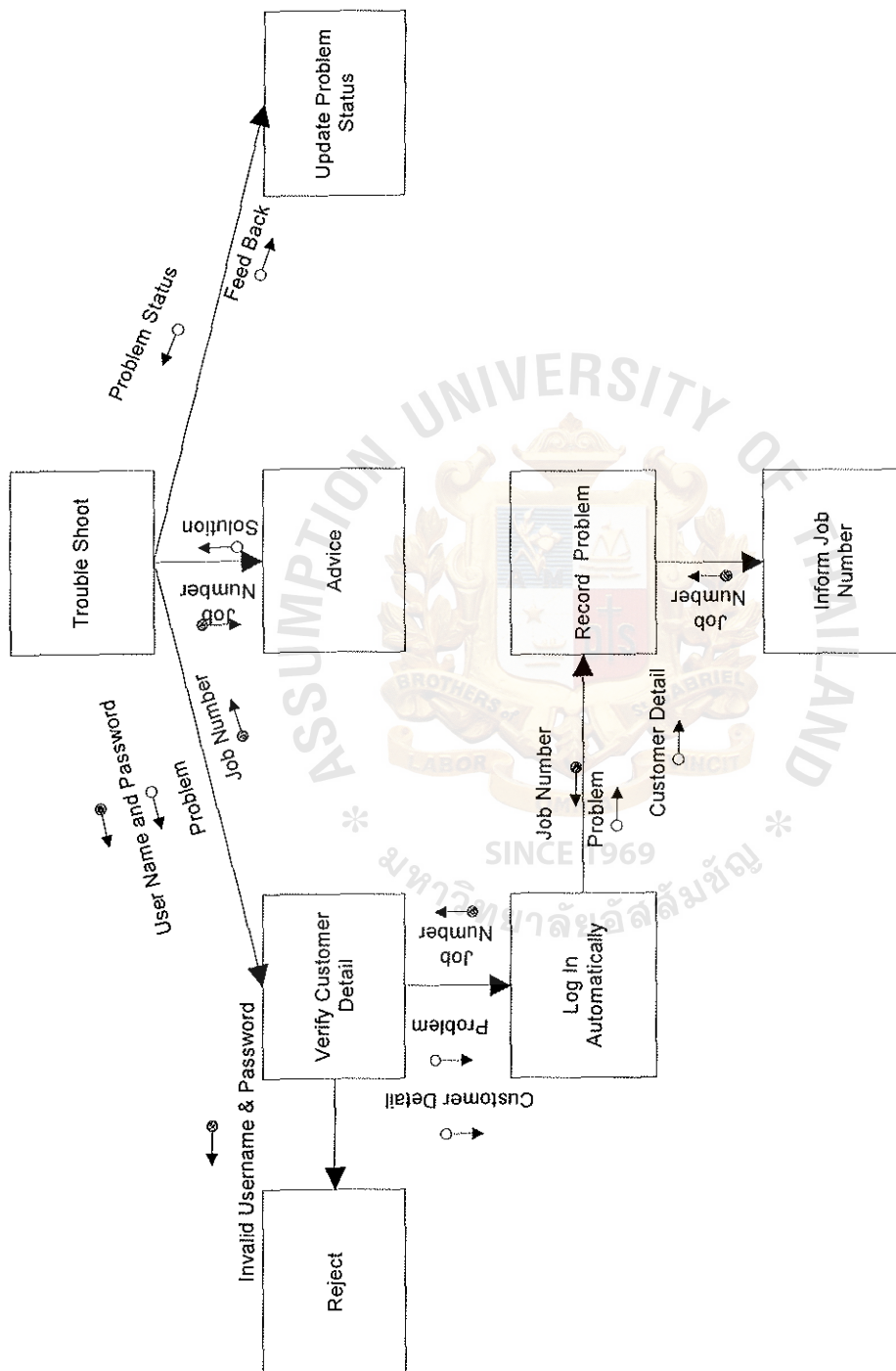Figure H.1.   Structure Chart of Help Desk System.

114

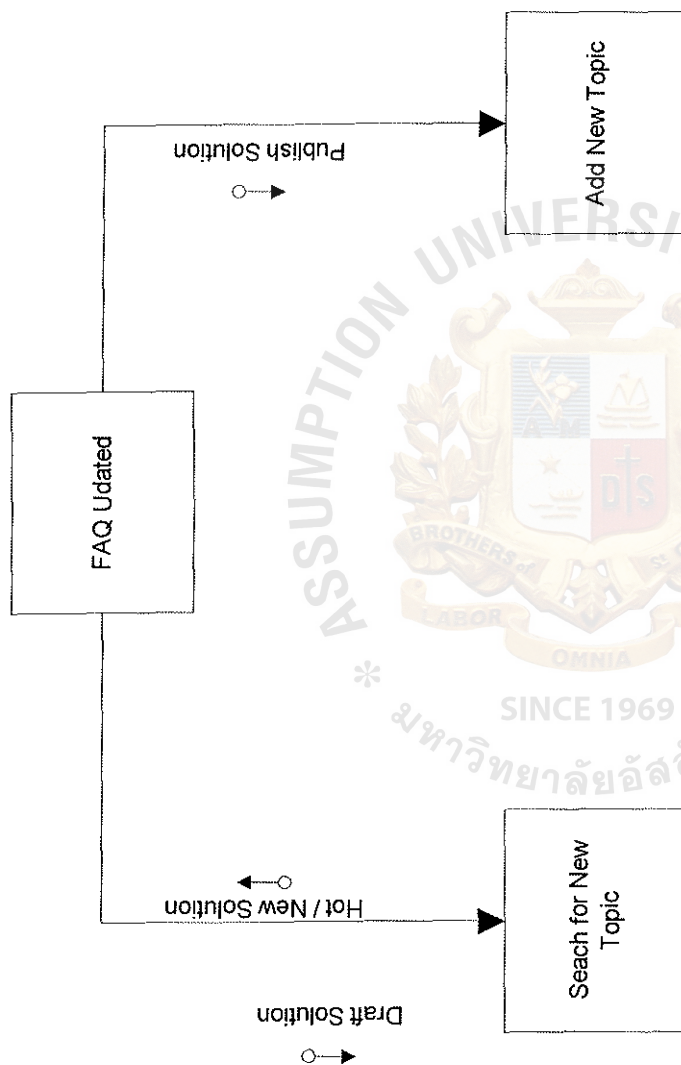Figure H.2.   Structure Chart of Help Desk System – Trouble Shoot.

115

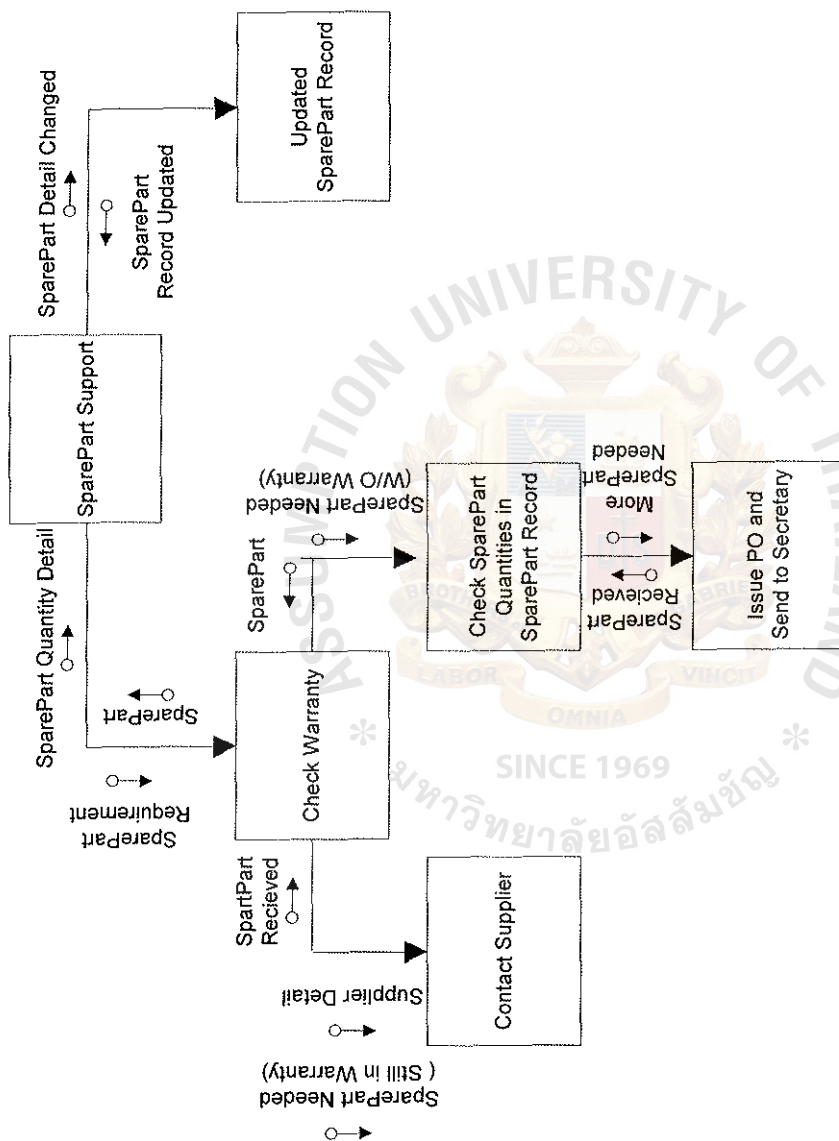Figure H.3. Structure Chart of Help Desk System – Edit and Update FAQ.

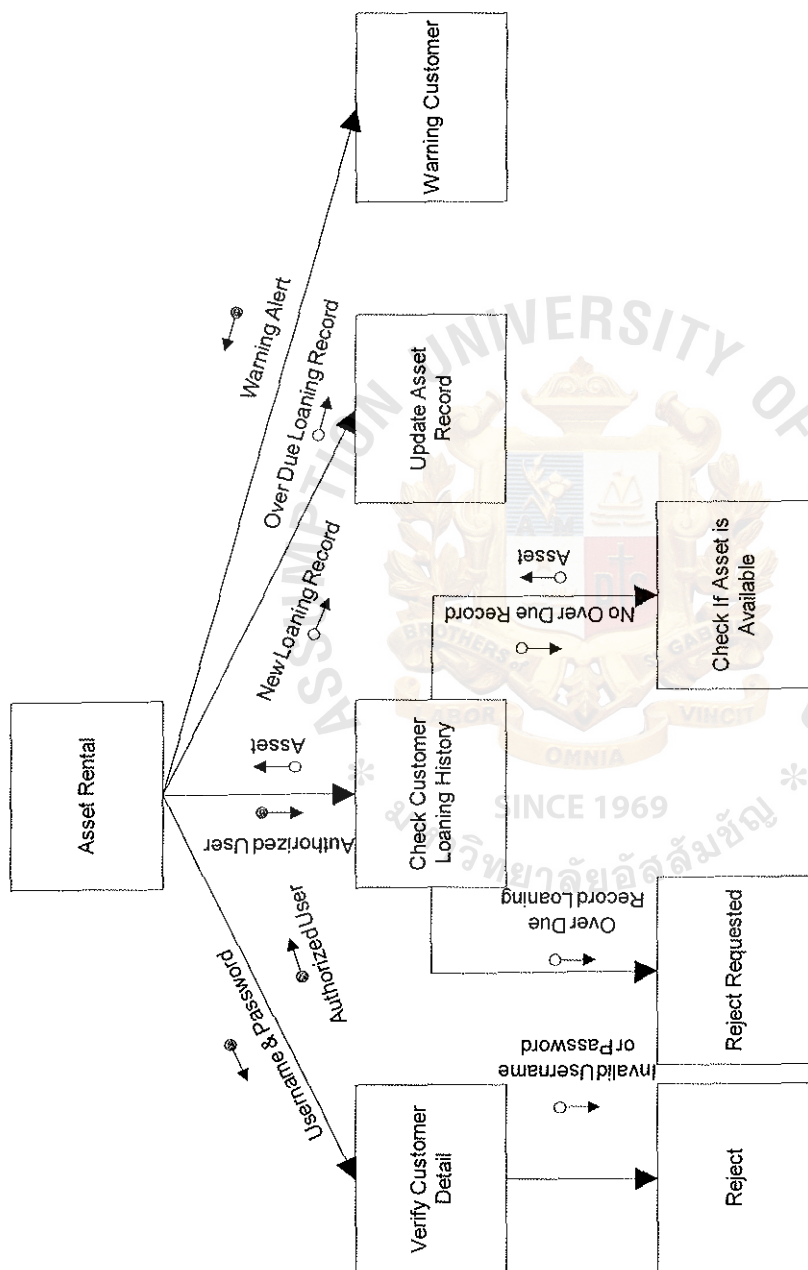Figure H.4. Structure Chart of Help Desk System – Support Spare Part.

117

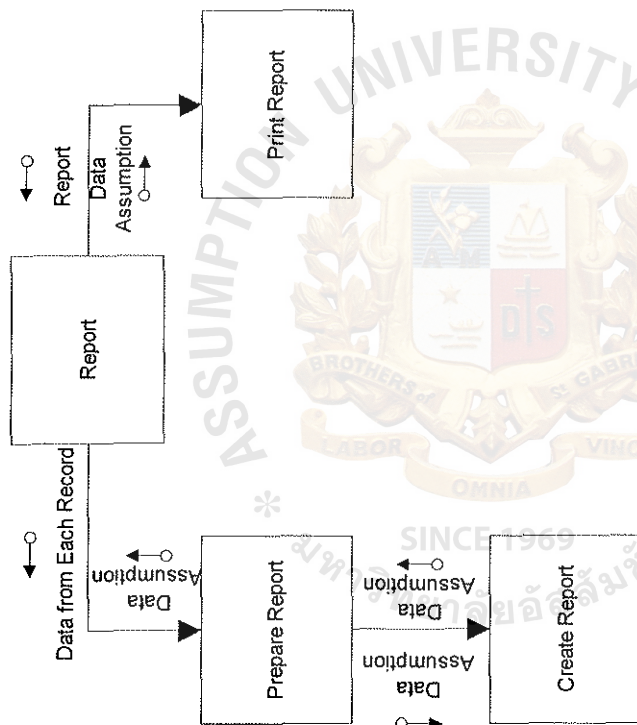Figure H.5.   Structure Chart of Help Desk System – Provide Asset Rental.

118

Figure H.6. Structure Chart of Help Desk System – Report.

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APPENDIX I

REPORT DESIGN

Service Activity Details

Detailing all service records

Service ID	1		Completed	☑
Item	Accharaw			
Vendor	Dell			
Technician	Oie		Service Date	10/9/01
Service Details			Repair Date	15/9/01
Can't access to the network because the ethernet line was broken				

Service ID	2		Completed	☒
Item	Eddie Murphie			
Vendor	SPV			
Technician	Vichai		Service Date	11/9/01
Service Details			Repair Date	

Service ID	3		Completed	☑
Item	Pat Van			
Vendor	Dell			
Technician	Oie		Service Date	12/9/01
Service Details			Repair Date	14/12/01
Reinstall MS office because Microsoft word doesn't work properly				

Figure I.1.   Service Activity Details.

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Accharaw

Description	Dell		**Vendor**	Dell
Serial Number	34635		**Make**	
Office/Location	Ed Tech		**Model**	Optiplex GX100
Desk/User	Accharawan		**Purchase Date**	14/9/00
Notes:			**Warranty Details**	3 yrs

Figure I.2.   Computer Detail.

Figure I.3.   Machine and Services Detail.

Service Activity Summary

Detailing all service records

ID	Item		Service Date	Repair Date	Completed
1	Accharaw		10/9/01	15/9/01	✓
2	Eddie Murphie		11/9/01		✗
3	Pat Van		12/9/01	14/12/01	✓

Figure I.4.   Service Activity Summary.

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Figure I.5.   Spare Parts Inventory.

Vendor History Report

Organisation	Dell
Contact	Sirivipa Khuntangwattana
Phone	02-670-7000
Fax	02-670-7001
Email	siri@dell.co.th
Notes	

Service Logs

Service ID	1	**Completed**	☑
Item	Accharaw		
Technician	Oie		
		Service Date	10/9/01
Service Details		**Repair Date**	15/9/01
Can't access to the network because the ethernet line was broken			

Service ID	3	**Completed**	☑
Item	Pat Van		
Technician	Oie		
		Service Date	12/9/01
Service Details		**Repair Date**	14/12/01
Reinstall MS office because Microsoft word doesn't work properly			

Figure I.6.   Vendor History Report.

SPV

Organisation	SPV
Contact	Veerasak Volya
Phone	02-559-2901
Fax	02-5592488
Email	veera@spv.co.th
Notes:	

Figure I.7.   Supplier Detail.

APPENDIX J

DATA DICTIONARY

Table J.1.   Notation of Data Dictionary.

Notation	Description
=	Is composed of
+	And
( )	Optional (may be present or absent)
{ }	Iteration
[ ]	Select one of several alternative choices
* *	Comment
Bold and underline character	Identifier (key field) for a store
|	Separates alternative choices in the [ ] construct

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J.2. Data Stores

Asset record	= *Data store of asset detail* {**Asset ID** + Serial_no. + Dept. + Room_no.}
FAQ	= *Data store of populalar request with the solution* {<u>**Job no**</u>.+ Prob_Cat + Asset_ID + Asset_typt + Solution}
Loaning record	= *Data store of Loaning detail* {<u>**Asset ID**</u> + User_ID + Start_date + Expected_end_date + Actual_end_date}
Problem record	= *Data store of request* {<u>**Job no**</u>.+ Prob_Cat + Asset_ID + Asset_typt + Notified_Date_time + User_ID + Ext_no. + Diagnosed_prob + Tech_name + Status + Completed_date}
User record	= *Data store of user detail* {<u>**User ID**</u> + Name + Surname + Dept. + Room_no. + Ext_no.}
Spare Part record	= *Data store of spare part detail* {<u>**Spare part ID**</u> + Spare_part_detail + Company_name + Quatity}
Supplier record	= *Data store of supplier* {<u>**Company name**</u> + name + surname + Position + Address + Tel_no. + Email + Mobile_no}

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J.3. Data Attributes

Actual_end_date   *The real date which user return the loaning asset*
Date = M/D/Y

Address   *The address which the supplier company located in*

Asset_ID   *The unique number of asset*

Asset_type   *The type of asset*

Company_name   *Name of supplier company*

Completed_date   *The date which the request is completed*

Dept.   *The department where the users or asset belong to*

Diagnosed_prob   *Analyse the problem*

Email   *Electronic Mail Address*

Expected_end_date   *The date which the task should be done or the asset should return*
Date = M/D/Y

Ext_no.   *The extension of telephone number*

Job_no.   *The unique number of request*

Mobile_no.   *Mobile phone number*

Name   *Person name*

Notified_date_time   *Date and time which user informs the problem*
Date = M/D/Y
Time = H:M:S

Position   *The position of person*

Prob_cat   *Problem category*

Qualtity   *Qualtity of asset or spare part*

Room_no.   *Room number*

Serial_no.   *Serial number of asset in case of warranty required*

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J.3. Data Attributes

Solution   *Solution of the problem*

Spare_part_detail   *Detail of the spare part*

Spare_part_ID   *The unique number of spare part*

Start_date   *Loaning date*

Status   *Status of job (request)*

Surname   *Person surname*

Tech_name   *Technician name*

Tel_no.   *Telephone number*

User_ID   *Unique number for individual user*

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J.4. Data Flows

Asset detail	{**Asset ID** + Asset_type + Dept + Room_ no.}
Asset rental	{**Asset ID** + User_ID + Asset_type + Start_date + Dept + Room_ no.}
Asset return	{**Asset ID** + User_ID + Asset_type + Start_date + Dept + Room_ no. + Actual_end_date}
Broken spare part (in warranty)	{**Spare part ID** + Purchase_date + Warranty period}
Broken spare part (w/o warranty)	{**Spare part ID** + Purchase_date + Warranty period}
Complicated problem	*The problem which help desk can not solve and need to transfer to the technician*
Draft solution	*Sulution which is not publish to the database yet*
Feed back	*The comment from users after the tech person help them to solved the problem*
Job number	{**Job ID**}
Loaning history	{**Asset ID** + User_ID + Asset_type + Start_date + Dept + Room_ no. + Expected_end_date + Actual_end_date}
Overdue asset loaning	{**Asset ID** + User_ID + Start_date + Dept + Room_ no. + Expected_end_date}
Problem and Customer detail	{**Job ID** + Customer ID}
Problem by call	*Problem which users inform by telephone*
Problem by Intra and Email	*Problem which users inform via request from on the intranet or Email*
Publish solution	*The solution of popular problem which is ready to publish to the database*
Report	*Create the report by selecting the field that user want to know*
Simple problem	*The problem which can solved at first step*
Solution	{**Job no** + Solution}
Spare part	{**Spare part ID** + Spare_part_detail}

J.4. Data Flows

|	
Supplier detail	{**Company name** + name + surname + Position + Address + Tel_no. + Email + Mobile_no}
Updated asset rec	{**Asset ID** + Asset_type + Dept + Room_no. + Purchase_date}
Updated problem status	{Job no. + Status}
Updated spare part quantity	{**Spare part ID** + Spare_part_detail + Date_out + Purchase_date + Company_name + Quatity}
User detail	{**User ID** + Name + Surname + Dept. + Room_no. + Ext_no.}
Warning	*Alert message when the job or overdue loaing or shortage of inventory*

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APPENDIX K

ER DIAGRAMS
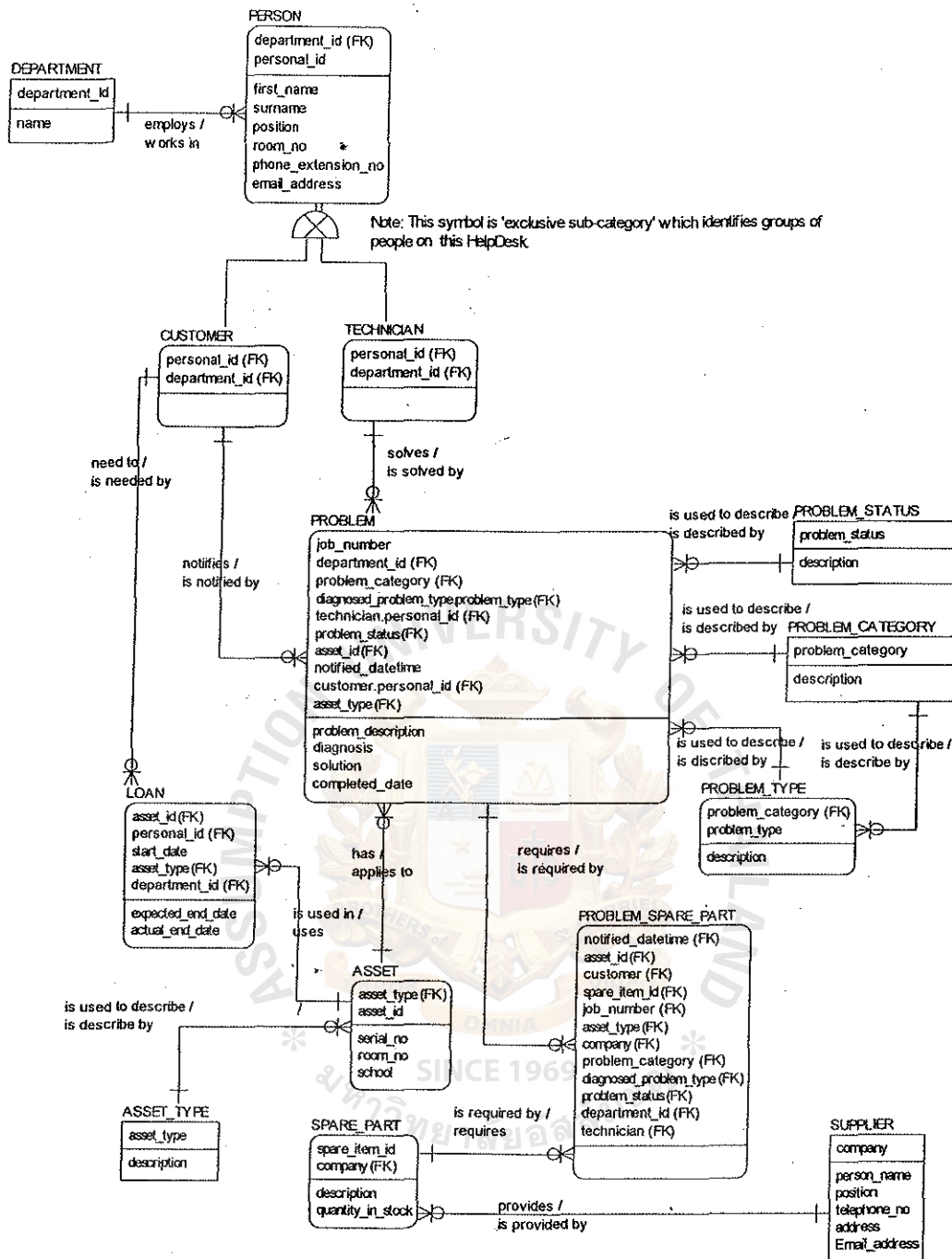
Figure K.1.   ER Diagram.

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