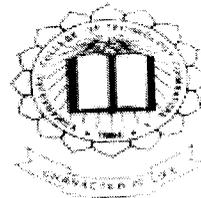


P-1470



# HOME HEALTHCARE MANAGEMENT SYSTEM

By

**K.RAJNIVAS**

Reg. No 71202621032

Of

**KUMARAGURU COLLEGE OF TECHNOLOGY  
COIMBATORE - 641006**

A PROJECT REPORT

Submitted to the

**FACULTY OF INFORMATION AND COMMUNICATION ENGINEERING**

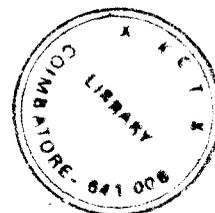
*In partial fulfillment of the requirements*

*for the award of the degree*

*of*

**MASTER OF COMPUTER APPLICATIONS**

June, 2005



**BONAFIDE CERTIFICATE**

Certified that this project report titled  
**HOME HEALTHCARE MANAGEMENT SYSTEM**

Is bonafide work of

**Mr. K.RAJNIVAS (Reg. No: 71202621032)**

who carried out the research under my supervision. Certified further, that to the best of my knowledge the work reported herein does not form part of any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.



Project Guide



Head of the Department

We examined the Candidate with University Register No. 71202621032

in the project Viva-Voce examination held on 23.06.2005



Internal Examiner



External Examiner 23/6

## ABSTRACT

The Project Titled “Home Health Care Management System” is Code Named as HHCMS, It is Application Software developed for a Home Health Care Agency for monitoring the Transaction Starting from Registration and up to the Bill Production.

The Home Health Care Management System is used maintain the data's of home health care agency. Home Health Care provides Services for Equipments, Transportation, Insurance, patient Consultation and rental Information for Equipments and Transportation. Home Health Care Management System enables the Home Health Care agency manager to maintain the records about the physician, patient, Nurse and Rental Information's.

The major goal of the system is used to maintain the details of Rental Information's, it gives the consultation records up to date for the physicians and Remainders about their Consultations and the rental Information for the customers. If a new customer comes to home health care agency, Manager will be registering his personal information and he will choose the type of service needed by the customer. If a customer is already a member, then manager doesn't needs to register the personal information, with the use of the registration ID Manager can directly register the type of services customer needs.

## ACKNOWLEDGEMENT

At this pleasing moment of having successfully completed the project work, I wish to acknowledge my sincere gratitude and heartfelt thanks to our beloved Principal **Dr.K.K.Padmanabhan B.Sc., (Engg), M.Tech, Ph.D.**, for having given me the adequate support and opportunity for completing this project work successfully.

I express my sincere thanks to **Dr. S.Thangasamy B.E(Honr), Ph.D.**, Professor and Head of the Department of Computer science & Engineering, who with his careful supervision has ensured me in attaining perfection of work.

I extend my sincere thanks to **Mr. A. MuthuKumar MCA, M.Phil**, Project Coordinator for rendering us all the timely helps through out the project.

I regard my heartfelt thanks and everlasting gratitude to my Project Guide **Mr. M. Manikantan MCA, M.Phil**, Lecturer, Department of Computer Science & Engineering for his uplifting ideas, inspiring guidance and valuable suggestions, which have been very helpful in refining upon the project.

## TABLE OF CONTENTS

CONTENTS	PAGE NO
ABSTRACT	iii
LIST OF TABLES	vi
LIST OF FIGURES	vi
Chapter 1 INTRODUCTION	
1.1 PROJECT OVERVIEW	1
1.2 ORGANIZATION PROFILE	2
Chapter 2 SYSTEM REQUIREMENT AND SPECIFICATION	
2.1 HARDWARE REQUIREMENT	5
2.2 SOFTWARE REQUIREMENT	5
2.3 SOFTWARE OVERVIEW	5
2.4 SPECIFICATION	15
Chapter 3 SYSTEM ANALYSIS	
3.1 EXISTING SYSTEM	17
3.2 PROPOSED SYSTEM	17
3.3 PROTOTYPING	18
Chapter 4 SYSTEM ANALYSIS	
4.1 DESIGN PRINCIPLES	20
4.2 ARCHITECTURE DESIGN	24
4.3 TABLE DESIGN	27
4.4 DATA FLOW DIAGRAM	31
Chapter 5 SYSTEM TESTING AND IMPLEMENTATION	
5.1 TESTING METHODS	37
5.2 IMPLEMENTATION	38
5.3 MAINTENANCE	39
Chapter 6 CONCLUSIONS	41
APPENDICES	42
REFERENCES	49

## LIST OF TABLES

TABLE NO	TABLE NAME
4.3.1	Registration Table
4.3.2	EquipmentsDetailTable
4.3.3	ReservationEquipDetail
4.3.4	TransportDetail
4.3.5	ReservationTransportDetail

## LIST OF FIGURES

FIGURE NO	FIGURE DESCRIPTION
4.4.1	DFD - Registration Details
4.4.2	DFD - Insurance Details
4.4.3	DFD - Transportation Details
4.4.4	DFD - Employee Details

## CHAPTER 1

### INTRODUCTION

#### 1.1 PROJECT OVERVIEW

##### 1.1.1 Home Health Care Management System

Home Health Care Management System Stores the records of Patients, Nurses, Physician, Equipment and Transport Information. Information about the Rental and Reminders about the expiry date of Rental. Patient Medical Records, Personal Information and Rental Information are retrieved by means of Reports.

##### **Major Modules in Home Health Care Management System are**

- Registration
- Patients
- Equipment
- Transportation
- Insurance
- Login

### **1.1.2 Project Scope**

- Searching the records and generating reports.
- Checking the availability of Rental Machines by giving date and time.
- Remainders about the Rental Machine Expiry Date and Consultation Date
- Consultation Reports can be stored.
- Summary Of patient Health is generated
- Registration of new products is done.

## **1.2 ORGANIZATION PROFILE**

Kaveri Infosys is the Indian strategic partner of the Infosys, Inc. Chicago. IL. U.S.A. Kaveri Infosys is one of the leading providers of Windows-based software solutions for the healthcare continuum. Incorporated in November 1995 and situated in Chennai.

### **Vision**

Great product Great place Great people

### **Focus**

The company has been totally focused on software development for the healthcare industry. It has all along been a leading provider of integrated software system for healthcare automation services. They are committed to provide error free software through continual improvement. They maintain highly competent human resources so that the customer's requirements are always met.

### **Services**

The Company currently is providing software product development and research and development services to their Principal InfoSys, Inc., US. The future plan will include offering services across the entire spectrum of technology-based services.

They improve the relationship among Patients, Provider and insurers by delivering quality products and services to managed healthcare services continuum and enabling them to expedite the availability of high quality, cost-effective and on time medical services.

## **Products**

Kaveri Infosys solutions are designed to eliminate fragmentation of information management through a revolutionary systems architecture that accommodates unique clinical, financial and administrative business processes found in various segments of the ambulatory and post-acute continuum. Kaveri Infosys healthcare software suites include:

- a. **MedSys Ambulatory/Acute** applications for physicians, rehab/therapy facilities and small hospitals and;
- b. **HomeSys Post-acute** solutions comprised of long-term care, home healthcare and hospice configurations.

## CHAPTER 2

### SYSTEM REQUIREMENT AND SPECIFICATION

The Software Requirements Specification is a technical specification of requirements for the software product. The goal of software requirements definition is to completely and consistently specify the technical requirements for the software products in a concise and unambiguous manner.

The Software Requirements Specification is based on the system definition high-level requirements specified during initial planning are elaborated and more specific in order to characterize the features that the software product will incorporate. The requirement specification is primarily concerned with functional and a performance aspect of the software product and emphasis is placed on specifying product characteristics is placed on specifying product characteristics without implying how the product will provide those characteristics.

Desirable properties of a Software Requirement Specification

- Correct
- Complete
- Consistent
- Unambiguous
- Functional
- Verifiable
- Traceable.

## 2.1 HARDWARE REQUIREMENTS

- Processor : Intel Pentium
- Processor : 500 MHZ
- Memory : 96 MB RAM
- Hard Disk : 10 GB

## 2.2 SOFTWARE REQUIREMENTS

- Operating System : Windows 2000/xp/NT Server
- Programming Language : VB.NET
- Database Server : Microsoft SQL Server 2000

## 2.3 SOFTWARE OVERVIEW

### What Is Microsoft .NET?

Microsoft .NET is software that connects information, people, systems, and devices. It spans clients, servers, and developer tools, and consists of:

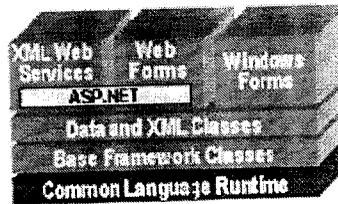
- The .NET Framework used for building and running all kinds of software, including Web-based applications, smart client applications, and XML Web services—components that facilitate integration by sharing data and functionality over a network through standard, platform-independent protocols such as XML (Extensible Markup Language), SOAP, and HTTP.
- Developer tools, such as Microsoft Visual Studio® .NET 2003 which provides an integrated development environment (IDE) for maximizing developer productivity with the .NET Framework.
- A set of servers, including Microsoft Windows® Server 2003, Microsoft SQL Server™, and Microsoft BizTalk® Server, that integrates,

runs, operates, and manages Web services and Web-based applications.

- Client software, such as Windows XP, Windows CE, and Microsoft Office XP, that helps developers deliver a deep and compelling user experience across a family of devices and existing products.

## What is the .NET Framework?

The .NET Framework is a development and execution environment that allows different programming languages & libraries to work together seamlessly to create Windows-based applications that are easier to build, manage, deploy, and integrate with other networked systems.



The .NET Framework consists of:

- **The Common Language Runtime (CLR)**

The common language runtime (CLR) is responsible for run-time services such as language integration, security enforcement, and memory, process, and thread management. In addition, the CLR has a role at development time when features such as life-cycle management, strong type naming, cross-language exception handling, and dynamic binding reduce the amount of code that a developer must write to turn business logic into a reusable component.

- **The Framework Class Libraries (FCL)**

A consistent, object-oriented library of prepackaged functionality. Base classes provide standard functionality such as input/output, string manipulation, security management, network communications, thread management, text management, and user interface design features.

The ADO.NET classes enable developers to interact with data accessed in the form of XML through the OLE DB, ODBC, Oracle, and SQL Server interfaces. XML classes enable XML manipulation, searching, and translations. The ASP.NET classes support the development of Web-based applications and Web services. The Windows Forms classes support the development of desktop-based smart client applications.

Together, the class libraries provide a common, consistent development interface across all languages supported by the .NET Framework.

### **Reasons for Using VB.NET**

- **Seamless Deployment.** VB .NET promises to end "DLL Hell" and it may. I haven't experimented with it much yet but I've heard mixed reviews. Probably it will be better once we're used to it. It can't be a whole lot worse.
- **More Robust Code.** The features they list here are the real-time background compiler (to check syntax as you type) and the task list. Neither of these is a big step beyond VB 6. They also list strict type checking (which is good) and structured error handling. Structured error handling is really just more like the way it works in C/C++. It has some advantages but also some big disadvantages such as no Resume statements and no On Error Resume Next capabilities.

- **Powerful Windows-base Applications.** This isn't a real big deal. They point to the Form Designer (we've always had that), control anchoring and docking (replaces straightforward code with confusing design time properties), in-place menu editor (the old one was fine), and the tab order editor (a nice but tiny feature).
- **Powerful, Flexible Data Access.** They say VB .NET provides ADO and ADO.NET. Actually it looks like Microsoft is trying to dump ADO. ADO.NET does have some nice features, but it's aimed strongly at Web-like program structures where database users never interfere with each other. Record locking doesn't work as it does in ADO so building a traditional desktop application for multiple users requires some trickery.
- **Simplified Component Creation.** The Toolbox now includes more non-visual components (sort of like the Timer control) for things like database connection, Dataset, message queues, etc. It's not hard to create these objects in your code. Putting them on the form lets you do a bit more design-time configuration for them so this isn't a bad thing; it's just no big deal.
- **Enhanced Control Creation.** They don't say much here. It's true that VB .NET lets you build user controls. I haven't seen any big advantages over how it works in VB5/6 but I haven't spent a huge amount of time on this. One BIG disadvantage is the user control object (and the Picture Box and Form for that matter) no longer have an Auto Redraw property. If you want Auto Redraw, you need to implement it yourself with your own bitmap buffers.

- Organizations are implementing off-the-shelf software packages for critical services such as human resources planning, manufacturing resources planning, and inventory control. These systems require databases capable of storing large amounts of data and supporting large numbers of users.
- Organizations have many users who must continue working when they do not have access to the network. Examples are mobile disconnected users, such as traveling sales representatives or regional inspectors. These users must synchronize the data on a notebook or laptop with the current data in the corporate system, disconnect from the network, record the results of their work while in the field, and then finally reconnect with the corporate network and merge the results of their fieldwork into the corporate data store.
- Managers and marketing personnel need increasingly sophisticated analysis of trends recorded in corporate data. They need robust Online Analytical Processing (OLAP) systems easily built from OLTP data and support sophisticated data analysis.
- Independent Software Vendors (ISVs) must be able to distribute data storage capabilities with applications targeted at individuals or small workgroups. This means the data storage mechanism must be transparent to the users who purchase the application. This requires a data storage system that can be configured by the application and then tune itself automatically so that the users do not need to dedicate database administrators to constantly monitor and tune the application.

- **Complete, Direct Access to the Platform.** This just means VB programmers can use the .NET Framework. That gives access to the registry, event log; performance counters, and files system. What this means in practice is you use new classes to do stuff that you would have done using API calls before. A nice feature but nothing you couldn't live without.
- **Integrated Reporting with Crystal Reports** (Professional edition and above). This lets you manipulate Crystal Reports within the IDE. I suppose you might care if you use Crystal Reports a lot.

## Database Design

Home Health Care Management System uses Microsoft SQL Server 2000 as its Backend. Microsoft Extends the Performance, reliability, quality and ease- of-use of Microsoft SQL Server version 7.0. Microsoft SQL Server 2000 includes several new features that make it an excellent database platform for large-scale online transactional processing (OLTP), data warehousing, and e-commerce Application.

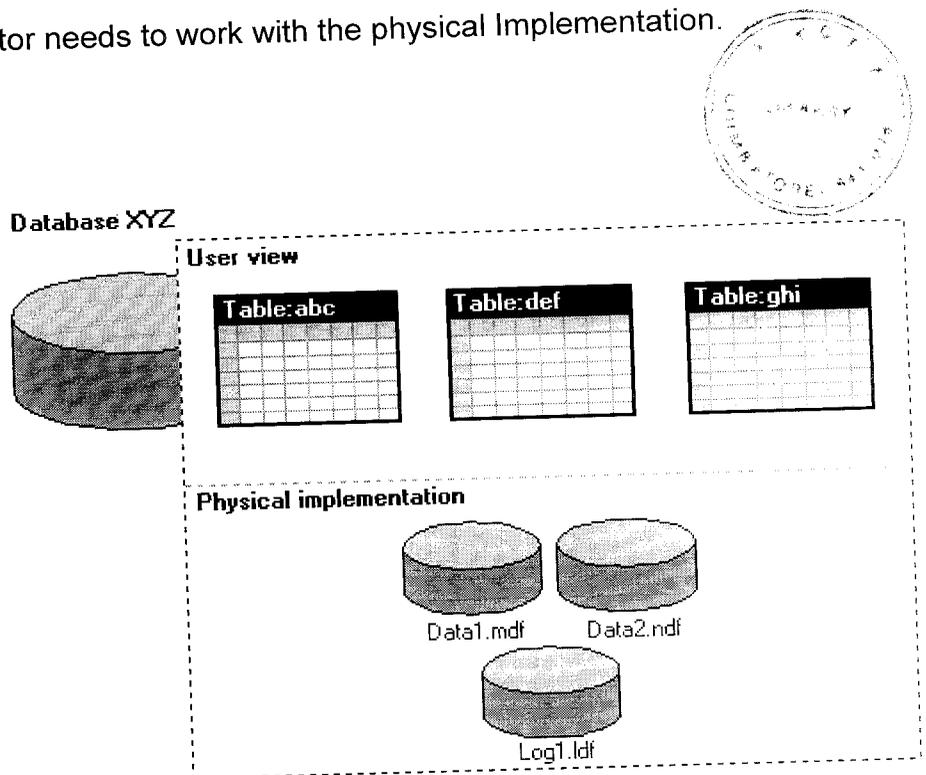
## Fundamentals of SQL Server 2000 Architecture

- Online Transaction Processing (OLTP) systems must be capable of handling thousands of orders placed at the same time.
- Increasing numbers of corporations are implementing large Web sites as a mechanism for their customers to enter orders, contact the service department, get information about products, and for many other tasks that previously required contact with employees. These sites require data storage that is secure, yet tightly integrated with the Web.

## Database Architecture

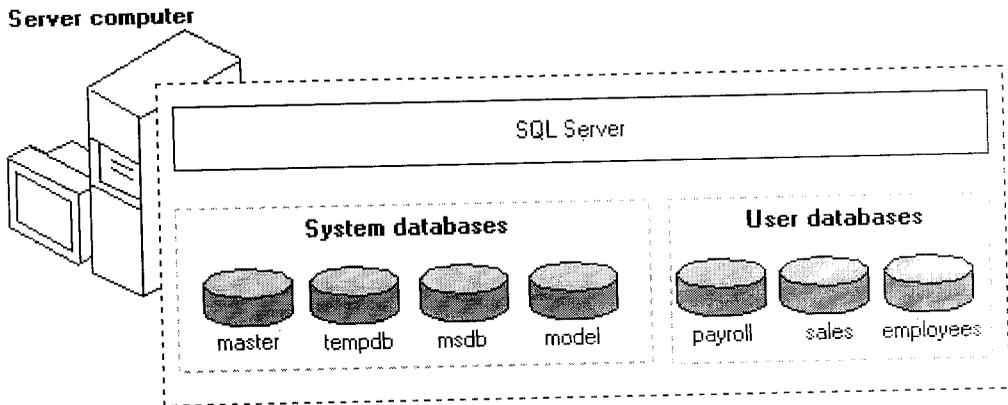
Microsoft® SQL Server™ 2000 data is stored in databases. The data in a database is organized into the logical components visible to users. A database is also physically implemented as two or more files on disk.

When using a database, you work primarily with the logical components such as tables, views, procedures, and users. The physical implementation of files is largely transparent. Typically, only the database administrator needs to work with the physical implementation.



Each instance of SQL Server has four system databases (**master**, **model**, **tempdb**, and **msdb**) and one or more user databases. Some organizations have only one user database, containing all the data for their organization. Some organizations have different databases for each group in their organization, and sometimes a database used by a single application. For example, an organization could have one database for sales, one for payroll, one for a document management application, and so

on. Sometimes an application uses only one database; other applications may access several databases.



It is not necessary to run multiple copies of the SQL Server database engine to allow multiple users to access the databases on a server. An instance of the SQL Server Standard or Enterprise Edition is capable of handling thousands of users working in multiple databases at the same time. Each instance of SQL Server makes all databases in the instance available to all users that connect to the instance, subject to the defined security permissions.

When connecting to an instance of SQL Server, your connection is associated with a particular database on the server. This database is called the current database. You are usually connected to a database defined as your default database by the system administrator, although you can use connection options in the database APIs to specify another database. You can switch from one database to another using either the Transact-SQL USE database name statement, or an API function that changes your current database context.

SQL Server 2000 allows you to detach databases from an instance of SQL Server, then reattach them to another instance, or even attach the database back to the same instance. If you have a SQL Server database

file, you can tell SQL Server when you connect to attach that database file with a specific database name.

## **Features of SQL Server 2000**

- **Internet Integration.**

The SQL Server 2000 database engine includes integrated XML support. It also has the scalability, availability, and security features required to operate as the data storage component of the largest Web sites. The SQL Server 2000 programming model is integrated with the Windows DNA architecture for developing Web applications, and SQL Server 2000 supports features such as English Query and the Microsoft Search Service to incorporate user-friendly queries and powerful search capabilities in Web applications.

- **Scalability and Availability.**

The same database engine can be used across platforms ranging from laptop computers running Microsoft Windows® 98 through large, multiprocessor servers running Microsoft Windows 2000 Data Center Edition. SQL Server 2000 Enterprise Edition supports features such as federated servers, indexed views, and large memory support that allow it to scale to the performance levels required by the largest Web sites.

- **Enterprise-Level Database Features.**

The SQL Server 2000 relational database engine supports the features required to support demanding data processing environments. The database engine protects data integrity while minimizing the overhead of managing thousands of users concurrently modifying the database. SQL Server 2000 distributed queries allow you to reference data from multiple sources as if it were a part of a SQL Server 2000 database, while at the same time, the distributed transaction support protects the integrity of any updates of the distributed data. Replication allows you to also maintain multiple copies of data, while ensuring that

the separate copies remain synchronized. You can replicate a set of data to multiple, mobile, disconnected users, have them work autonomously, and then merge their modifications back to the publisher.

- **Ease of installation, deployment, and use.**

SQL Server 2000 includes a set of administrative and development tools that improve upon the process of installing, deploying, managing, and using SQL Server across several sites. SQL Server 2000 also supports a standards-based programming model integrated with the Windows DNA, making the use of SQL Server databases and data warehouses a seamless part of building powerful and scalable systems. These features allow you to rapidly deliver SQL Server applications that customers can implement with a minimum of installation and administrative overhead.

- **Data warehousing.**

SQL Server 2000 includes tools for extracting and analyzing summary data for online analytical processing. SQL Server also includes tools for visually designing databases and analyzing data using English-based questions.

## **2.4 SPECIFICATION**

### **Platform Specification**

#### **Operating System**

An Operating System is a Collection of Computer program that control, how the computer works. It can also be defined as the software, which acts as a traffic cop, directing requests and information to add from the various devices within a single PC. The OS handles disk requests (read and write) keyboard translations, memory accesses, peripheral accesses and much other function.

#### **Windows 9x**

Windows 9xs is a desktop operating system. It runs on Intel/Cyrix/AMD processors. It support file system FAT32 (NRWF), VFAT (NRWF). Also integrated with DOS for command line interface and explore for graphical user interface. It supports multimedia applications and Internet applications. Generally it is used as the operating system.

#### **Windows NT**

This is a network operating system. This is based on the Client-Server architecture. Benefits of Windows NT are;

- More intuitive interface.
- Better multitasking and multithreading.
- Clients can be attached to workstations.
- Plug-and-play technology.
- Higher level of security.
- NTFS-a powerful NT File System.

## **Windows 2000/NT Server**

Microsoft Windows 2000/NT server 4.0 is a multipurpose server operating system. A multipurpose operating system integrates a variety of network services.

The services it provides are designed to address customer requirements and are managed in a single way. It offers a complete end-to-end solution. It gives the ability to exploit the popularity of compatible third party products and such application as Active Server pages, for dynamic content web pages or Server for specialized database tasks and web server for web services.

## CHAPTER 3

### SYSTEM ANALYSIS

#### 3.1 EXISTING SYSTEM

The Home Health Care is not computerized, they feel uneasy to maintain the records the manually.

##### Disadvantages

- They take lot of time for generating the summary of patients.
- Manager feels uneasy to check the availability of machines.
- There is no support for Rental Information Expiry date.

#### 3.2 PROPOSED SYSTEM

The Proposed System Home Health Care Management System is developed using VB.NET as front end MICROSOFT SQL SERVER 2000 as back end.

##### Advantages of Proposed System

- The System is Categorized as follows
  - Physician and nursing care
  - Therapy
  - Companionship
  - Supplying medical equipments
  - Transportation
- When Physician Consult the patients they store the reports.
- Reports about the patients are generated automatically.

- Rental, Machine, Transport Information are registered.
- Checking the availability of machines is done in a fraction of second.

### **3.3 PROTOTYPING**

Planning the software development process involves several important considerations. The most important consideration is to define a product life cycle.

The software life cycle encompasses all activities required to define, develop, test, deliver, operate, and maintain a software product. Different models emphasize different aspect of the life cycle, and no single life-cycle model is appropriate for all software products. Life-cycle models used are the phased model, the cost model, the prototype model and the successive versions model.

#### **The Prototype Life-cycle Model**

Prototype is a mock-up or model of a software product. A prototype incorporates components of the actual product. Typically, a prototype exhibits limited function capabilities, low reliability, and inefficient performance.

#### **There are several reasons for developing a prototype:**

- To illustrate input data formats, message, reports, and interactive
- Dialogues for the customer. This is used to explain various processing option to the customer and to gain better understanding of the customer's needs.
- To explore technical issues in the proposed product.

The nature and extent of prototype to be performed on particular software is dependent on the nature of the product. New versions of existing products can most likely be developed using the phased life-cycle model with little or no prototyping. Development of a totally new product will probably involve some prototyping during the planning and analysis phase or iterating through a series of successive designs and implementations may develop the product.

## **CHAPTER 4**

### **SYSTEM DESIGN**

#### **4.1 DESIGN PRINCIPLES**

The process of design involves “conceiving and planning out in mind” and “making a drawing, pattern, or sketch of”. In software design, there are three distinct types of activities: external design, architectural design and detailed design. Architectural design and detailed design are collectively called internal design.

External design of software involves conceiving, planning out, and specifying the externally observable characteristics of a software product. These characteristics include user displays and report formats, external data sources and data sinks, and the functional characteristics, performance requirements and high-level process structure for the product. External design begins during the analysis phase and continues into the design phase. Requirements definition is concerned with specifying the external, functional and performance requirements for a system. External design is concerned with refining those requirements and establishing the high level structural view of the system.

Internal design involves conceiving, planning out and specifying the internal structure and processing details of the software product. The goals of internal design are to specify internal structure and processing details, to record design decisions and indicate why certain alternatives and trade-offs were chosen, to elaborate the test plan, and to provide a blueprint for implementation, testing and maintenance activities. The work products of internal design include a specification of architectural structure, the details of algorithms and data structures, and data structures, and the test plan.

### **Design of Home Health Care Management System**

Home Health Care Management System for a home health care agency to maintain their the records From the patients, nurses, physician Registration till the Bill Production .It reduces the time of the manager while retrieving the records.

For each consultation of the patient by physician or nurse The Consultation reports are stored in the HHMS, When the physician wants reports of particular patient he want retrieve the records based on the given Registration code and patient Code.

### **Requirements Definition**

#### **What is Home Health Care?**

Home health Care provides cost-effective, high quality, multidisciplinary health and hospice care to individuals of all ages, to improve health, prevent illness and enable terminally ill patients to remain at home

Home health care may be considered for patients who are:

- Recovering from an illness.

Undergoing treatment

- Disabled.
- Chronically ill.
- Terminally ill.

### **Types of home health care services:**

#### ✓ **Physician and nursing care**

Skilled registered nurses help speed a patient's recovery after an operation or illness. They also provide ongoing care to the aged or chronically ill. Often, with the help of a visiting nurse, lengthy hospital stays and burdens on family members can be avoided.

Following consultation with physicians, nurses perform specific tasks including:

- Completing physical assessments
- Instructing families on the care of acutely ill patients
- Dressing wounds
- Supervising treatment and diet
- Instructing in and supervising the use of medication
- Administering intravenous medications
- Counseling on health issues
- Assisting patients and their families with crisis intervention

#### ✓ **Physical therapy**

Home Care physical therapists plan physical rehabilitation programs to help patients regain or improve physical functioning. Therapists work to increase joint movement, restore use of their impaired muscles, control pain, or regain their ability to engage in activities of daily living.

### ✓ **Speech Therapy**

A learning disability, accident or illness may leave a person unable to communicate effectively. Speech pathologists evaluate each person's needs and direct a program of exercises to help him or her regain speech

### ✓ **Occupation Therapy**

After an accident or illness, patients may have to relearn physical and general awareness skills. Occupational therapists assess patients' abilities and develop a comprehensive program to help them regain many skills. With instruction (and sometimes using adaptive devices or aids) they can begin to do more tasks independently.

### ✓ **Medical social services**

Sometimes help is indicated when patients have difficulty coping with the emotional stress of an accident or illness. Medical social workers assist in resolving problems and conflicts involving both patients and their families. Assistance can include: locating suitable housing; arranging for financial relief; and resolving family problems.

### ✓ **Home health aides**

Under supervision by our professional staff, home health aides help patients with personal care and hygiene (such as bathing and exercise) and perform light housekeeping tasks and errands

### ✓ **Nutritional support**

An assessment by a nutritionist or registered dietitian can be an indispensable prerequisite to expedient recovery. Orders to consider include a dietary consultation if weight loss exceeds a given amount, if weight continues to be lost after a calorie/protein supplement has been added to a regular diet or when a special diet is requested

- ✓ **Companionship**
- ✓ **Supplying medical equipments**
- ✓ **Transportation**

## **4.2 ARCHITECTURAL DESIGN**

Architectural Design is concerned with refining the conceptual design of the system, identifying internal processing functions, decomposing high level functions into sub functions, defining internal data streams and data stores and establishing relationships and interconnections among functions, data streams and data stores.

### **4.2.1 Home Health Care Management System – Module Overview**

HHCMS consists of six modules

- Patient Module
- Insurance Module
- Equipment Module
- Transportation Module
- Remainder Module
- Employee Module

#### **Patient Module**

Patient module allows maintain the details of patients and gets the type of service the patient needs and sends it to the particular module or department.

- Physician Care
- Nurse Care
- Physical Therapy
- Speech Pathology

## **Insurance Module**

Insurance module registers the customer information that who needs insurance, and type of scheme, after registration he will be generated and insurance ID and noted to the customer knowledge, if a customer wants to Extend his Policy for some extent he should know his ID for processing, Searching the records is done based on the customer Registration ID or Name, It displays the lists of policy he has insured, then if we click an individual policy it displays the information about that policy that customer has chosen.

## **Equipment module**

Equipment module maintains the equipments in home health center, purchasing, checking the availability of the machines based on the date and time, Registration for the Equipments rental is not allowed if the machines are not available on the particular date and time, If Customer is non member the he Should register his personal information, if not so he can directly register for equipment that he needs for rental, searching records is done on transaction ID and Registration ID, in case of Registration ID it lists the Transactions Done By the customer .

## **Transportation module**

Transportation module allows us to maintain the data like purchasing; additionally it provides the availability of vehicle based on the date and Registration for Rental of the Transportation, Registration is not allowed if availability of the vehicle is not present.

## **Employee Module**

In this module we register the personal information of the Employee in Registration module, in this module Employee Qualification and his professional information's are stored and an employee id is generated.

With the use of employee id we can find the employee uniquely and his personal information and employee profession is retrieved.

When the employee resigns the job record is deleted in the Employee table and moved to the resigned employee table.

Resigned employee can also be searched by means of resigned id or employee name, always employee name cannot be found uniquely, in that case list of same names are displayed and from that manager can choose to display the resigned employee information.

## **Remainder Module**

Remainder module lists the events of the day for physician and the rental expiry date. We can set the private remainder also, when ever we register for rental information an option will be shown for remainder, he can also ignore the remainder, if physician consults the patient he makes reports and Consultation date in that situation there will be an option, he can set the remainder if he likes or he can ignore it.

## 4.3 TABLE DESIGN

### 4.3.1 Registration Table

Field Name	Key	Data Type
Number_Regis	Primary Key	Int
Name_Regis		Char
Address_Regis		Char
City_Regis		Char
State_Regis		Char
Phone_Regis		Int
Age_Regis		Char
Sex_Regis		Char
Martial_Regis		Char

### Description

The Above Registration Table Stores the Personal Details of the Home Health Care Customer, Auto Number is generated for the Number\_Regis field name When the Customer Registers the Registration ID is Generated and Shown to the Customer.

### 4.3.2 Equipments Detail Table

Field Name	Key	Data Type
Number_Equip	Primary Key	Int
Name_Equip		Char
ManufName_Equip		Char
Dealer Name_Equip		Char
DealerAddress_Equip		Char
Purchase Date_Equip		Date
Rate_Equip		Int
Quantity_Equip		Int
G/WexpiryDate_Equip		Date
Expense_Equip		Int
RentalPerHour_Equip		Int
RentalPer Day_Equip		Int

#### Description

The above Equipments Detail table is used to maintain the information about the equipments.

### 4.3.3 Reservation Equip Table

Field Name	Key	Data Type
Number_Reser_Equip	Primary Key	Int
Number_Regis	Foreign Key	Int
Number_Equip	Foreign Key	Int
ModeOfRent_Reser		Boolean
SDate_Reser_Equip		Date
EDate_Reser_Equip		Date
STime_Reser_Equip		Date
ETime_Reser_Equip		Date
APaid_Reser_Equip		Int

#### Description

The above Reservation Equip table is used to maintain the reservation details of the equipments, their personal information is retrieved using the Number\_Regis Field and Equipments information is retrieved using the Number\_Equip Field

#### 4.3.4 Reservation Transport Details

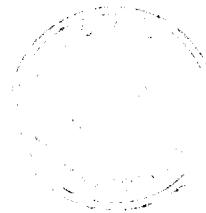
Field Name	Key	Data Type
Number_Reser_Trans	Primary Key	Int
Number_Regis	Foreign Key	Int
Number_Trans	Foreign Key	Int
NfHrs_Reser_Trans		Int
APaid_Reser_Trans		Int

#### Description

The above ReservationTrans Table is used to maintain the reservation details of the Transportation, their personal information is retrieved using the Number\_Regis Field and Transport information is retrieved using the Number\_Trans Field

#### 4.4 DATA FLOW DIAGRAM

Data flow diagram is commonly used during problem analysis and design. A DFD shows the flow of data through a system. It views the system as a function that transforms the inputs into desired outputs. A DFD aims to capture the transformation that takes place within a system into output data so that eventually the output data is produced. The agent that performs the transformation of data from one state to another is called a process (Bubble). Named circles show the processes and dataflow are represented by named arrows. A square defines a source or destination of system data. An open rectangle is a data source.



### 4.4.1 REGISTRATION DETAILS

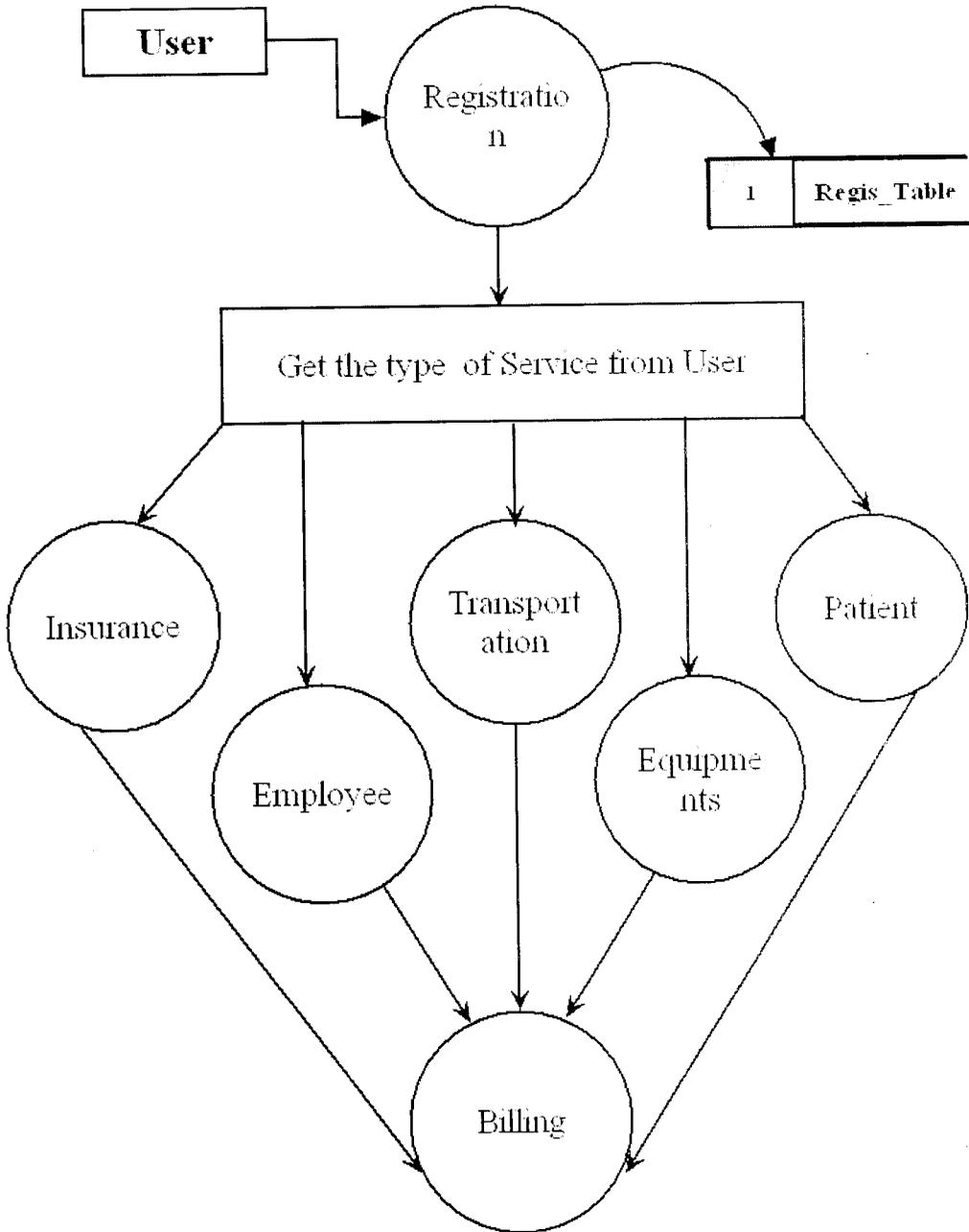
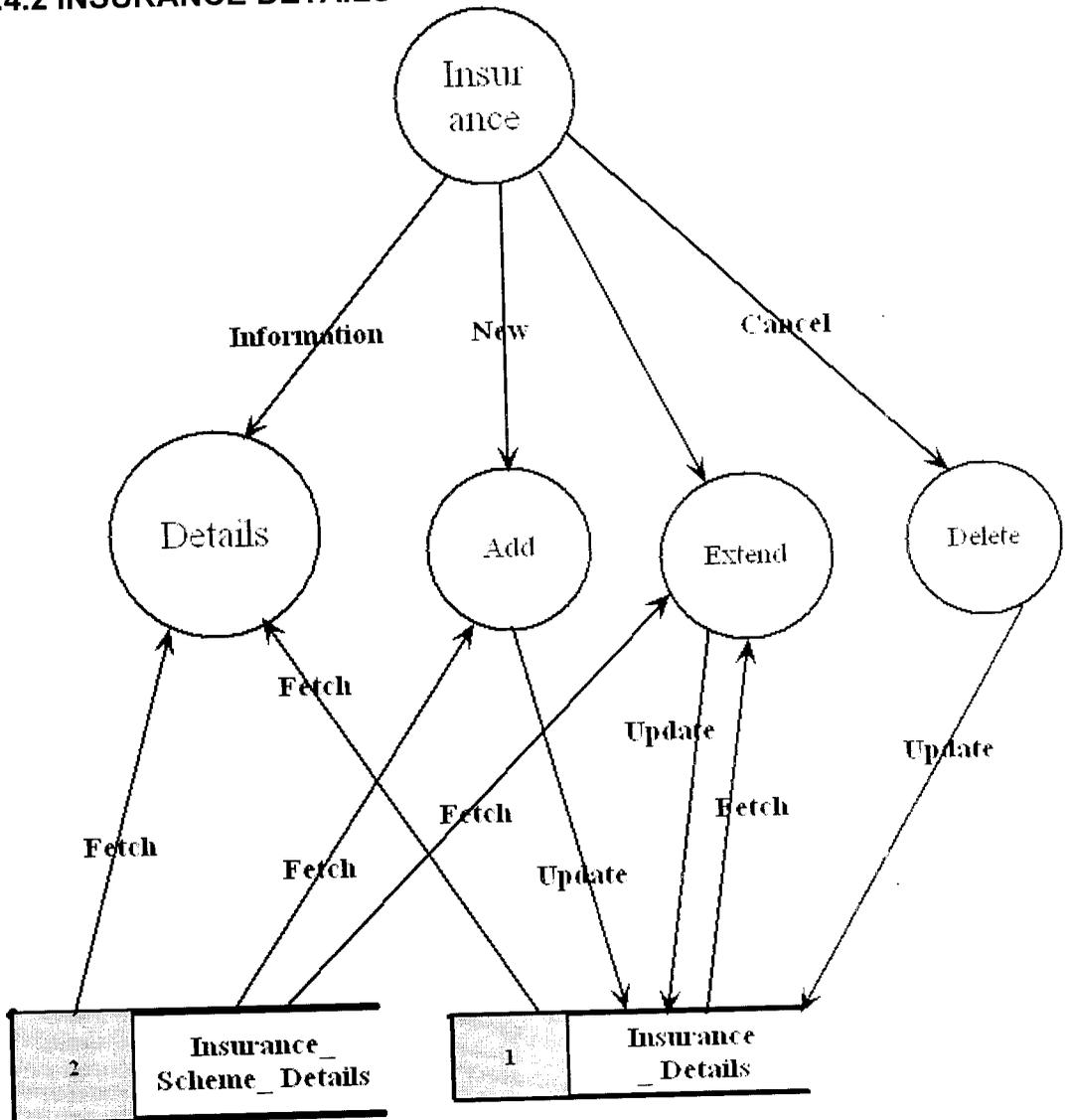


Figure 4.4.1 DFD for Registration Details

#### 4.4.2 INSURANCE DETAILS



### 4.4.3 TRANSPORTATION DETAILS

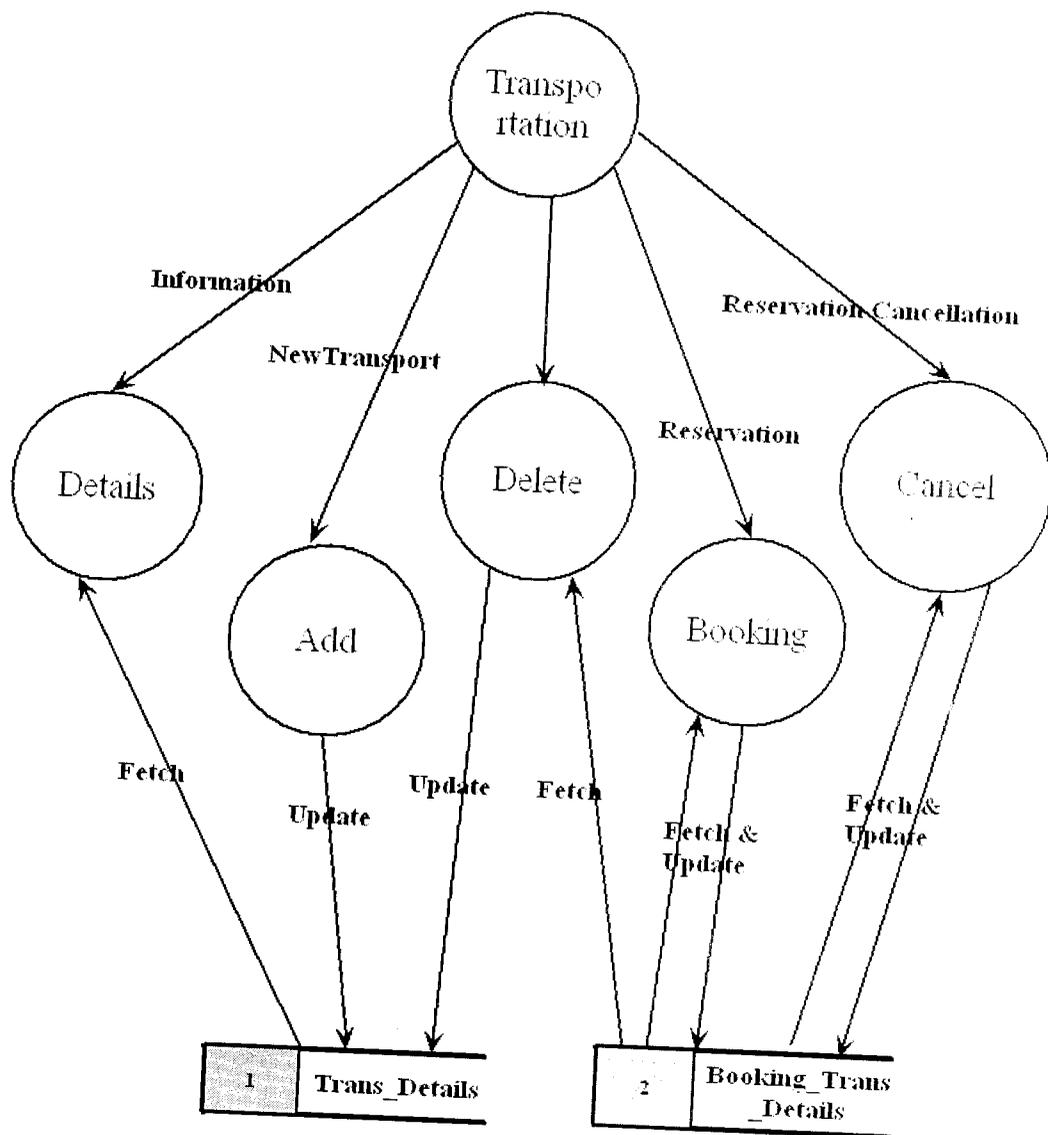


Figure 4.4.3 DFD for Transportation Details

4.4.4 EMPLOYEE DETAILS

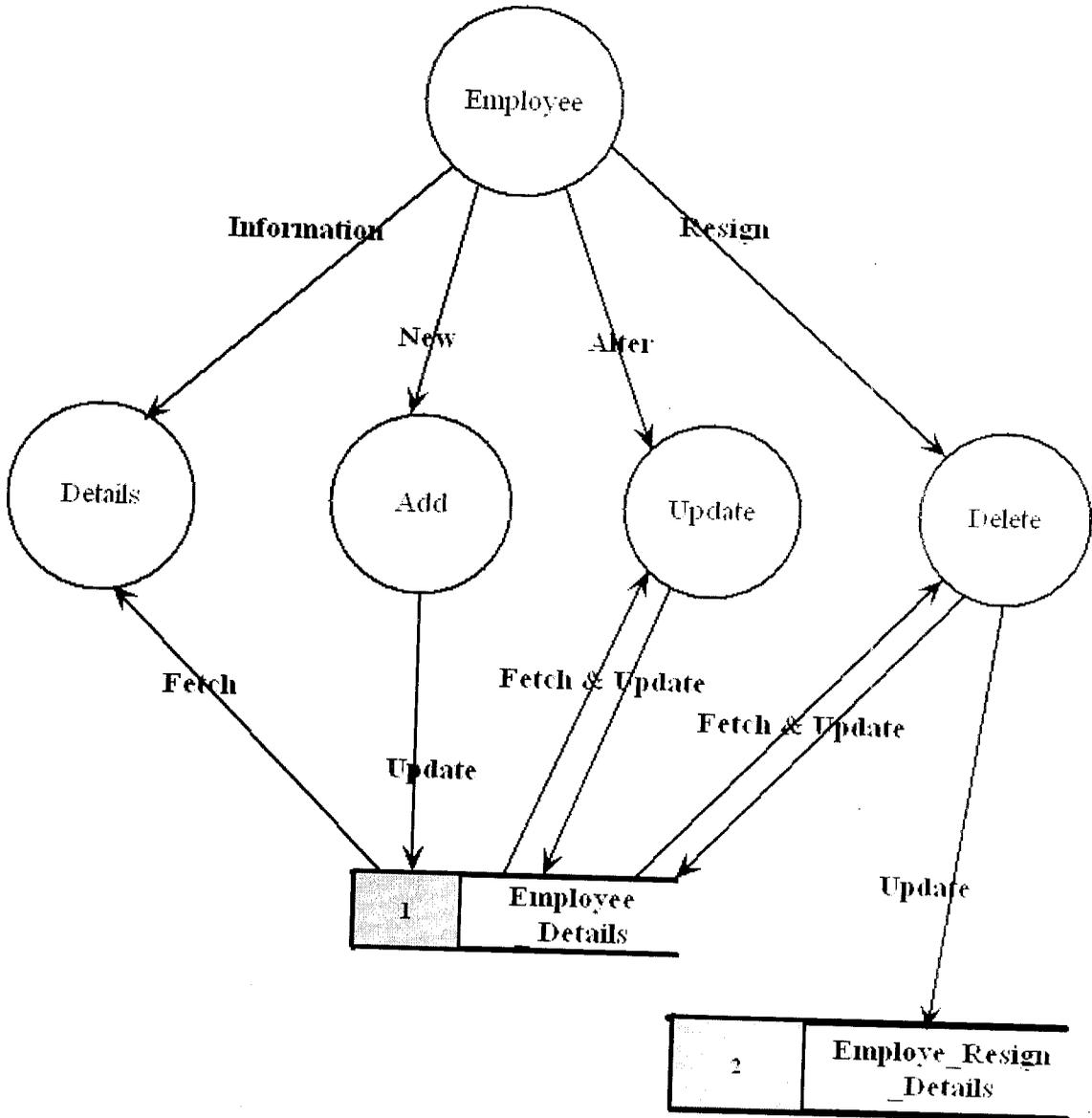


Figure 4.4.4 DFD for Employee Details

## CHAPTER 5

### SYSTEM TESTING AND IMPLEMENTATION

The system testing deals with the process of testing the system as a whole. This is done after the integration process. Moving through each module from top to bottom tests the entire system. The verification and validation processes are then carried out. The errors that occur at testing phase are eliminated and a well functioning system is developed.

Test case design focuses on a set of techniques, which meets all testing objectives, which are mentioned below.

1. Testing is a process of executing a program with the intent of finding an error.
2. A successful test is one that uncovers an as yet undiscovered error.

Testing demonstrates that software functions work according to specifications. In addition data collected from testing provides a good indication of software reliability and some indication of software quality as a whole.

Testing results are used for detecting errors. Critical modules are tested as early as possible. The following tests are carried out.

## 5.1 TESTING METHODS

### 5.1.1 Unit Testing

It focuses verification efforts on the smallest unit of software design, the module. This is also known as **Module Testing**. The modules are tested separately. This testing is carried out during programming stage itself.

### 5.1.2 Validation Testing

Validation testing can be defined in many ways but a simple definition is that validation succeeds when the software functions in a manner that can be reasonably expected by the users.

After validation test has been conducted one of the two possible conditions exist

1. The function or the performance characteristics confirm to specification and are accepted
2. A derivation from specification is uncovered and a deficiency list is created.

### 5.1.3 Output Testing

After performing the validation testing the next step is output testing of the proposed system since no system is useful if it does not produce the required output in the specific format. Asking the users about the formats required by them tests the outputs generated or displayed by the system under consideration.

### **5.1.4 User Acceptance Testing**

User acceptance of a system is a key factor for the success of any system. The system under consideration is tested for user acceptance by constantly keeping in touch with prospective system users at the time development and making changes whenever required.

## **5.2 IMPLEMENTATION**

The implementation phase of software development is concerned with translating design specification into source code. The primary goal of implementation is to raise source code and internal documentation so that conformance of the code to its specification can be easily verified, and so that debugging, testing and modification are eased. This goal can be achieved by making the source code as clear and straightforward as possible. Simplicity, clarity and elegance are the hallmarks of good programs; obscurity, cleverness and complexity are indication inadequate design and misdirected thinking.

Source code clarity is enhanced by structured coding techniques, by good coding style, by appropriate supporting documents, by good internal comments and by the features provided in modern programming languages.

The goal structured coding is to liberalize control flow through a computed program so that the execution sequence follows the sequence in which the code is written. The dynamic structure of a program as it executes then resembles the static structure of the written text. This enhances readability of code, which eases understanding, debugging, testing, documentation and modification of programs. It also facilitates formal verification of programs. The structure coding techniques are as follows:

- Single entry, Single exit constructs
- Efficiency considerations
- Data Encapsulation
- Recursion

### 5.3 MAINTENANCE

Maintenance is the enigma of system development. It holds the software industry captive tying up programming resources. It could be described as the symmetric process of changing the software that is already in operation in order to prevent system failures and to improve the performance. Software maintenance involves keeping software interfaces simple and standard, paying particular attention to troublesome modules, replacing faulty components and generally planning to replace components that are old, obsolete, faulty, or at risk for imminent failure.

There are several factors that require to be maintained. They are

- Hardware platforms change or become obsolete.
- Operating system change.
- Compiler change
- Language standard's change.
- Communication standard's change
- Graphical user interface change.
- Related application software package change.

## **Maintenance can be classified into**

- Adaptive maintenance
- Perceptive maintenance
- Preventive maintenance
- Corrective maintenance

### **Adaptive Maintenance**

It deals with adapting software change in the environment. It does not lead to changes in the system functionality.

### **Perceptive Maintenance**

It mainly deals with accommodating new or changed users requirements. It also includes activities to increase the system performance or to enhance its user interface. The objective of perceptive maintenance should be to prevent failures and optimize the software.

### **Preventive Maintenance**

Preventive maintenance concerns activities aimed at increasing the system's maintainability such as updating documentation adding comments, improving modular structure of the system.

### **Corrective Maintenance**

This deals with the repair of faults found. Some of the major causes of maintenance problems are:

- Unstructured code
- Maintenance programmers having insufficient knowledge of the system and on application domain.

## Chapter 6

### Conclusion

Home Health Care Management System is successful Software with all the requirements being satisfied. This software has successfully archived the functionality that was expected.

It contain three major packages

- Registration
- Rental
- Remainder

It provides a user friendly environment and reduces the Home Health Care Manager difficulties

Further Enhancements

- Provide facilities for accepting the cash in credit cards.
- Provide facilities for online booking of equipments.
- Can be Extend the over all the branches.

## APPENDIX – SCREEN LAYOUT

## Registration for Personal Information

Personal Information	
Name	Senthil
Address	Ganapathy
Gender	<input checked="" type="radio"/> Male <input type="radio"/> Female
Date Of Birth	23-04-2005
Marital Status	Single
Phone Number	06660
Mother Tongue	Tamil
Category	Equipments

Registered Information	
Registration ID	Reg9 <a href="#">Link --&gt;</a>

# Searching the Personal Information

Home Health Care - [Find Pers Info Form]

Registration Employee Patient Equipments Transportation Data Navigate

**Search Options**

Registration ID: Reg1

Name: Rajivias

**Personal Information**

Date Of Birth: 24-06-1982

Address: Amman Kovil Thottam

Gender:  Male  Female

Marital Status: Widow

Mother Tongue: English

Phone Number: 248423

## Searching the Employee Information

Home Health Care - [Current Employee Search]

Registration Employee Patient Equipments Transportation Data Navigate

Search Options

Registration ID

Name

Employee Information

Qualification	<input type="text" value="MCA"/>	Basic Pay	<input type="text" value="2000"/>
Profession	<input type="text" value="Driver"/>	Allowances	<input type="text" value="200"/>
Experience	<input type="text" value="3"/> in Yrs	License No	<input type="text" value="1000"/>
Date Of Joining	<input type="text" value="18-04-2005"/>	Mode Of Increment In Pay	
Agreement	<input type="radio"/> Quater <input checked="" type="radio"/> Half		
	<input type="text" value="Accomudation ,Food provided"/>		

# Registration for Patients Consultation

Home Health Care - [Patient Consultation]

Registration Employee Patient Equipments Transportation Data Navigate

✓ X ○ ← → ⚙

<b>Patient Registration Information</b> Registration ID: Reg9 Name: Senbil	<b>Major Consultation</b> <input checked="" type="radio"/> Existing <input type="radio"/> New Knee	<b>Report For Last Visit</b> Consulted Date: 03-03-2005
<b>Consultation Reports</b> Consultation Date: 10-03-2005 Reports: He is Revoring from his injury Next Visit Date: 10-03-2005		<b>Reports</b> Dressing is Removed , asked him to walk Next Visit Date: 25-03-2005

## Registration for Equipments Rental

Home Health Care - [NewReserEquip]

Registration Employee Patient Equipments Transportation Data Navigation

Registration For Equipments Rental

**Data Entry**

Registration ID: Reg3

Equipment Name: Kannan

Mode Of Rental:  Days  Hours

Strating Date: 17/04/2005

Ending Date: 21/04/2005

---

**Rental Information**

Rental	750	Advance Paid	350
Advance to be Collected	360		

## REFERENCES

- Online reference of Dot Net [www.microsoft.com](http://www.microsoft.com).
- Online reference of Dot Net [www.DotNetSpider.com](http://www.DotNetSpider.com)
- Online reference of Dot Net [www.DotNetHeaven.com](http://www.DotNetHeaven.com)
- Visual Basic. Net and the .Net Platform.
- Inside SQL Server 2000.