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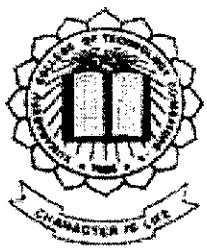

DISK MANAGEMENT SYSTEM

By

VIJAYAKUMAR K.N
(Registration Number: 71205621057)

Of
KUMARAGURU COLLEGE OF TECHNOLOGY
COIMBATORE 641 006

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for the award of the degree

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ANNA UNIVERSITY
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BONAFIDE CERTIFICATE

Certified that this project report titled **Disk Management System** is the bonafide work of **Mr. VIJAYAKUMAR K.N.** (Registration Number: 71205621057) 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.

Supervisor

Ms. R.K. Kavitha, M.C.A., M.Phil.,
Department of Computer Applications
Kumaraguru College of Technology
Coimbatore-6

Head of the Department

Dr. M. Gururajan M.Sc., Ph.D.,
Department of Computer Applications
Kumaraguru College of Technology
Coimabatore-6

Submitted to Project and Viva Examination held on 01-07-08

Internal Examiner 1/7/08

External Examiner 1/7/08

COMPREHENSIVE BUSINESS SOLUTIONS

Project Completion Certificate

This is to certify that Mr. **K.N. Vijayakumar** (Register No: 71205621057) of Kumaraguru College of Technology, had done his project at Comprehensive Business Solutions, Chennai with the project title **"Disk Management System"**, under the guidance of Mr. Christopher Theo Samuel. B from Dec 2007 to Jun 2008. During the project, he has successfully covered all the areas required for his project.

We wish him all success in his career.

For Comprehensive Business Solutions

Christopher Theo Samuel. B

HR - Manager

No 5F Lakshmi Bhawan, 609 Anna Salai, Chennai - 600 006, Ph: +91 044 4207 1112, +91 044 4204 8660, +91 044 4204 8661,
E-mail:

ABSTRACT

Disk Management System software is a library system for organizing each and every data. Disk Management System compresses the text and image files so that it is convenient to search through the entire Disk's without needing to insert each Disk into the CD Drive.

The Disk Management System has another one recovery module that has been integrated. It is used to find any lost and deleted data on your drive (e.g. hard disk) even if the partition table is lost! Lost Data, that is the result of a system crash can also be recovered.

The data retrieval from an almost impossible situation is the key feature in this DMS where the corrupted data can be retrieved easily in a feasible manner. So, there is no need of using separate software or product for data retrieval or data storage. By this DMS itself user can be able to search with the use of index and he can also obtain the retrieval of any corrupted data due to disk failure or power shutdown.

Recovery is designed to run on media with non-mechanical problems and will automatically repair the Partition Table for FAT32 and NTFS formatted and damaged media. Table damage is minor problem. Damage beyond these are not minor problems and should only be worked on by Data.

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CHAPTER 1

INTRODUCTION

1.1 SYSTEM OVERVIEW

The project titled "**Disk Management System**" offers total solution to the various project related requirements of the Media Disk users.

The requirement for the Disk Management System was felt due to the nature of the work required, which involved a lot of information such as data details, documents details, software details, audio/video details requirements, searching particular data, handling issues raised.

Data-loss results from the fact that the directory entries and/or the FAT contents are deleted or contain incorrect information, we can rescue the lost data from a bad or trashed CD, DVD, hard disk, removable disks.

Disk Management System software is a library system for organizing each and every data. Disk Management System compresses the text and image files so that it is convenient to search through the entire Disk's without needing to insert each Disk into the CD Drive. All that is needed to do is to put a number or name on each disk in the library, and Disk Management System will do the rest.

Once each Disk is scanned, it appears that the Disk Management System directory is searching and displaying the directory structures, pictures, files and even text from text files that are stored in CD's/ DVD's and other Disk's; we can also finally search for a lost file on the storage disks without even taking one CD off the shelf.

Disk Management System scans and compresses the data from removable storage mediums (diskettes, CD's, DVD's etc.), or any hard drive path that is selected, then it creates a directory on the hard drive where the image and text data is stored in a much smaller amount of hard drive space. Each CD image is super-compressed, meaning you can scan and store the images of thousands of data and music CD's on your hard drive.

Disk Management System also scans compresses and stores the image of text documents from all the storage disks. You can then search for files or even full-text search within those files and locate the CD you need. For audio CD's, Disk Management System lists the albums and track names.

The Disk Management System has another one recovery module that has been integrated. It is used to find any lost and deleted data on your drive (e.g. hard disk) even if the partition table is lost! Lost Data, that is the result of a system crash can also be recovered.

Data-loss of the content itself:

Data is completely lost; if the content is damaged or overwritten (the file was not lost due to incorrect information in the FAT or the directory entries).

This could have the following causes:

- The Hard disk/floppy/dvd disk is physically damaged
- Viruses may have destroyed the data
- Writing other files to the disk has led to it, that some or all clusters of a file were changed. In this case only a part of the data can be recovered.

1.2 COMPANY PROFILE

Comprehensive Business Solutions is an innovative venture founded by three visionaries with an aim to make life of the millennial manager easy. Our experiment started when our research yielded that managers in the SME segment were occupied with mundane back office activities and redundant paper works. We at Comprehensive Business Solutions realized that technology can substitute mundane processes and reduce managerial intervention. Markets demand critical activities from the managers of this millennium. It is imperative for them to channelize their precious time into decision making, critical thinking, analytical reasoning and quicker reflexes. This we made our USP, aim, vision, motto and everything Lateral thinking and quest to become a leader in other potential segments led us to refocus our strategies into segment-oriented marketing and research, providing cost-effective solutions to numerous segments. To name a few: Call Taxi's, Holiday resorts and Leisure clubs, Rice merchants and mill owners, Gold houses, Multi-brand retails, LCD display boards, large scale stockists etc. We at Comprehensive Business Solutions rely more on human creativity and reflexes than impermeable technology, for the fact that technology were the illusions that man had created in his mind. That is why we don't promise complete business solutions rather we prefer to deliver comprehensive business solutions, because we sincerely believe that there is always a scope for improvement and innovation. Mind Matters.

YOU NAME IT, WE HAVE IT. If that sounds like a cliche remark, we justify it with our intellectual capital sourced from various backgrounds. Our team comprises of professionally qualified enthusiasts each with expertise in his domain, always in quest to bring live what a customer desires. Our successful execution of projects on different platforms viz hardware interface, GUI interface with cross-functional back-end's and front end, embedded automation and web-hosting solutions speaks for the same.

CHAPTER 2

SYSTEM STUDY AND ANALYSIS

2.1 SYSTEM STUDY

The system study phase involves the initial investigation of the structure of the system, which is currently in use, with the objective of identifying the problem and difficulties with the existing system. The major steps involved in this phase include definition of the user requirements and study of the present system for the problem verification. The performance expected by the new system is also defined in this phase in order to meet the user requirements. The information gathered from various documents regarding the present practice are analyzed and evaluated and the findings are reviewed in order to establish specific system objectives.

2.2 PROBLEM STATEMENT

The media disks users, audio/video collectors and data backup's to manage their data.

Finding files on hard drives can be a nightmare, and finding files on removable disks such as CD-ROMs, Zip disks and diskettes can be impossible. Disk Management System lets you catalog all the disks, so you'll never lose a file again.

To overcome the problem of data search, data storage and data recovery the DMS is developed. The searching, organizing, storing and recovery of the data is made easier so that the user can depend upon this product, and if a circumstance occurs where the searching and recovery had to be done in a quick time the use can always use the DMS to make their search and recovery effectively.

The DMS provides the user with the index that has all the contents of each and every drive and CD's where the user can search the CD via the index. He/she need not go and search in each and every thing. The index contains a fully fledged feature that it can be searched via the artists, albums, genre, composers and a lot more.

The data retrieval from an almost impossible situation is the key feature in this DMS where the corrupted data can be retrieved easily in a feasible manner. So, there is no need of using separate software or product for data retrieval or data storage. By this DMS itself user can be able to search with the use of index and he can also obtain the retrieval of any corrupted data due to disk failure or power shutdown.

2.3 EXISTING SYSTEM

The existing system of this DMS is fully a manual process. If we want to know the contents of a disk means we have to boot it and then only we will come to know that what is in that disk. But by the way of this DMS we will search via artists, albums, composers and so on. We can also know the contents of each and every CD via the index that is created for all the CD/DVD's.

The data recovery which is available in the DMS is not available in the previous systems that are developed. It's difficult to retrieve the data from the Drives and Disks that are corrupted. We can copy other data except the corrupted sector from a disk. The data recovery plays a major role in this century, so it is an ultimate thing to retrieve the data from disrupted files or drives.

The proposed system has many advanced features that are not available in the already developed system. We can organize and store the data to the disk according to many views that are possible and we can also retrieve the data from the disk based on each view viz artists, albums, composers, genre, duration. We can also combine these with others to search the data which will be effective in the long run.

So, the proposed system has many ultimate features than the existing one which is a whole manual process and it takes lot of time to synchronize and retrieve the data and the data recovery is not also of a high standard so that if once a data is lost means it is lost for ever. This proposed system comes with features that eliminate all these problems and so that it has an edge over the others.

Drawbacks of the Existing System

- ✓ It's a manual system.
- ✓ Data can't be searched and retrieved easily.
- ✓ The data can't be retrieved from a corrupted disk easily.
- ✓ The system can't be catalogued and the search is not an easy process.

2.4 PROPOSED SYSTEM

The proposed system DMS (Disk Management System) has all the features that are synchronized to make it as powerful utility software where the searching time can be saved by just viewing at the contents and not by looking it detailed into each and every CD ROM's.

The DMS is also used to retrieve the deleted items from Hard disk, CD/DVD or from the memory stick. The proposed system is used to maintain and organize catalogue of your media collection, and File recovery and file undelete utility for partitions including CD-ROMs, audio CDs, diskettes, ZIP removable drives, DVDs, or any other media that Windows can access as a removable drive.

The "Disk Management System" can provide access to the contents of any media you have from a cataloged database, even if the media itself is not available now on the system you can browse lists of files and folders, search by any criteria, use descriptions and copy data to hard drive, Recovery is all about getting back your files from crashed, formatted data.

Catalog uses window-based interface, this means that access to main functions of program (viewing disk and folders content, searching, viewing information about selected object) won't require from you opening a lot of additional windows. This feature accelerates work with program and provides simple access to all important functions of program

Recovery is designed to run on media with non-mechanical problems and will automatically repair the Partition Table for FAT32 and NTFS formatted and damaged media. Table damage is minor problem. Damage beyond these are not minor problems and should only be worked on by Data.

Advantages of the Proposed System

- ✓ The search is made simple and the searching is done with the help of an index.
- ✓ It is not necessary to look into all the CD's to look out for the contents present in the CD.
- ✓ We can also search through the different views that are available.
- ✓ Data retrieval plays a major factor so that the data can be easily retrieved from a corrupted file or disk.

2.5 SYSTEM ANALYSIS

Methodology followed in this project is Water fall model. Water fall model follows different phases in developing a software project.

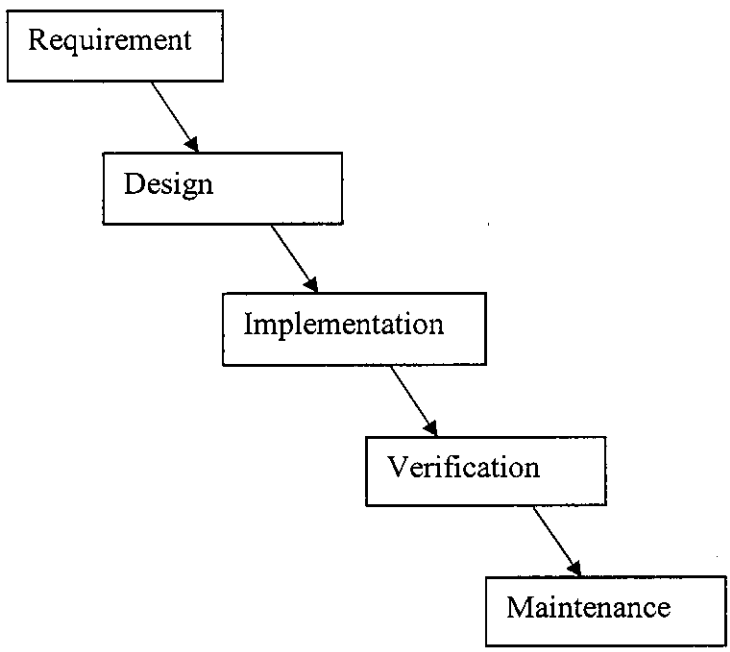

Figure 2.5.1

Requirements specification

This phase is the process of gathering information. When the requirements are fully completed, one proceeds to design.

Design

Design should be a plan for implementing the requirements given. When the design is fully completed, an implementation of that design is made by coders.

Implementation

Implementation is the process of implementing our project by integrating various modules and making it as a workable module.

Verification

Verification is the process of verifying whether our requirement is achieved or not.

Maintenance

Maintenance is the process of maintaining our software in future if any malfunction occurs.

2.6 FEASIBILITY ANALYSIS

Feasibility analysis is the measure of how beneficial or practical the development of the System will be to the project. Once the problem is explained information is gathered about the system to test whether the system is viable Technically, Financially and Operationally. feasibility analysis consists of

- ✓ Detailed definition of tasks
- ✓ Definition of current and future system environments
- ✓ Determination of critical success efforts
- ✓ Analysis and selection of system components to be migrated
- ✓ Analysis of technical and economical feasibility
- ✓ Resource planning and project duration
- ✓ Hardware and software recommendations.

Thus, feasibility study is carried out in three phases as follows:

2.6.1 TECHNICAL FEASIBILITY

Technical Feasibility is the measure of practicality of a specific technical solution and the availability of technical resources and expertise. It centers on the existing computer system (hardware, software, etc.) and to what extent it can support the new addition. This involves financial consideration to accommodate technical enhancement.

The proposed system is to be developed using VB.net 2005 which is one of the leading technologies in the market. These technological resources are easily available and the company/project does not need to acquire any development licenses. Visual studio .NET 2005 is already available with the company and individual persons. These technologies work well on Microsoft platforms. At present, the system will work in an intranet environment. Future expansion is planned but will not affect this project.

2.6.2 OPERATIONAL FEASIBILITY

Operational Feasibility asks if the system will work when it is developed and installed. It checks for the support of the management, the current business methods, user's involvement and their attitude towards the proposed system, etc.

The proposed system has found encouraging support from the software backup users, the data collector's management as it will be of great use to them. The backup users and data collectors of the project are also committed to have the system operational as it will save time and reduce their workload. Also since the software backup users leads and data collectors can have easy access to data information, recover the data. The current processes followed in the project would be depicted in the system as it is.

2.6.3 ECONOMIC FEASIBILITY

Economic Feasibility is the measure of the cost-effectiveness of the proposed system. The investment to be made in the proposed system must prove a good investment to the project by returning benefits equal to or exceeding the costs incurred in developing the system.

The proposed benefits of the system will outweigh the costs to be incurred during system developed since the system does not require procurement of additional hardware facilities it is economically feasible. It uses VB.Net 2005 for its development. So it's found that the benefits outweigh costs. In addition capability of the system to incorporate future enhancement will improve the performance to suit the future need of the company/project.

2.7 USERS OF THE SYSTEM

The users of the proposed Business Resource & Workflow Management System have been categorized as below and each of the user categories will have a set of rights which manage their use of the proposed system.

- ✓ Software backup users
- ✓ Data Users

Software backup users data is searching and displaying the directory structures, pictures, files and even text from text files that are stored in CD's, DVD's and other disks; you can finally search for a lost file on all of your storage disks without even taking one CD off the shelf.

Data users find any lost and deleted data, disk on your drive (e.g. Hard Disk, CD/DVD, Memory Stick and other) even if the partition table is lost! Lost Data, cd/dvd scratch that is the result of a system crash, unreadable can also be recovered

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CHAPTER 3

DEVELOPMENT ENVIRONMENT

3.1 HARDWARE REQUIREMENTS

The hardware support required for deploying the application

System Configuration

Processor	: Intel Pentium IV Processor / Athlon Processor or Higher
Memory	: Minimum 512 MB
Hard Disc	: 20GB or More
Media	: CD / DVD, Removable Media
Printer	: Laser Printer

3.2 SOFTWARE REQUIREMENTS

The software support required for deploying the application

Operating System	: Windows XP or Higher
Front End Tool	: VB.NET 2005

3.3 PROGRAMMING ENVIRONMENT

3.3.1 THE VISUAL BASIC .NET

The Visual Studio.Net provides the tool of most direct use to developers: A common software development environment offering facilities for development, compilation, browsing, and debugging shared by many languages. This environment, an outgrowth of Visual Studio extended with an application programming interface, not only supports Microsoft-implemented languages such as Visual C++, Visual Basic, and C# but also allows third-party vendors to plug in tools and compilers for other languages.

.NET BENEFITS

Users and developers can expect numerous benefits from the spread of.NET. For many, the most impressive component will be the ASP.NET framework. ASP.NET is not an incremental update of the ASP (active server pages) technology available on Windows. It is a new development that provides tools for building smart Web sites with extensive associated programming facilities. Interactive Software Engineering's Web site devoted to Eiffel under .NET, illustrates some of the framework's most attractive aspects.

- ✓ ASP.NET's Web controls provide a user interface similar to what is possible in today's non-Web GUI environments and far beyond what HTML offers as a default. From drag and drop to input validation, Web controls facilitate building WebPages that look like a modern non-Web GUI.

- ✓ The Web controls, handled by default on the server side, yield browser-dependent rendering—output that is automatically tailored to the browser. Some operations can be processed on the client side—for example, if the Web site visitor is using a recent version of Internet Explorer or the browser supports dynamic HTML or JavaScript. In the default case, the server handles the interaction and renders everything as plain HTML.

- ✓ ASP.NET accomplishes one of the most delicate aspects of Web request processing: maintaining a client's state. HTTP is a stateless protocol, but any realistic Web interface a shopping basket, for example—must retain client information from one page display to the next. ASP.NET maintains session state without storing client information on the server, thereby freeing developers from using cumbersome manual techniques such as URL encoding, hidden fields, and cookies. It can accomplish this both on a single server and across Web farms.

- ✓ Through its connection to ADO .NET, which handles database connections, ASP.NET enables setting up part of a Web page to reflect the contents of a database table directly, without manual intervention. Anyone who has tried to code HTML tables displaying database contents will appreciate this feature.

- ✓ Because ASP.NET is directly tied to the .NET object model, compilers, and runtime mechanisms, the code associated with a Web page can be part of an application, however complex, benefiting from mechanisms such as security, versioning, and jitting, from the efficiency of .NET's compiled approach, and from any .NET-supported languages. .NET's versioning facilities allow on-the-fly updates: Just replace a page with its new version, and it will be automatically compiled the next time around, without the need to stop and restart the server.

Infrastructure of .NET

- ❖ JIT → Just In Time. An acronym for "just-in-time," a phrase that describes an action that is taken only when it becomes necessary, such as just-in-time compilation or just-in-time object activation. JIT compilation the compilation that converts Microsoft intermediate language (MSIL) into machine code at the point when the code is required at run time.

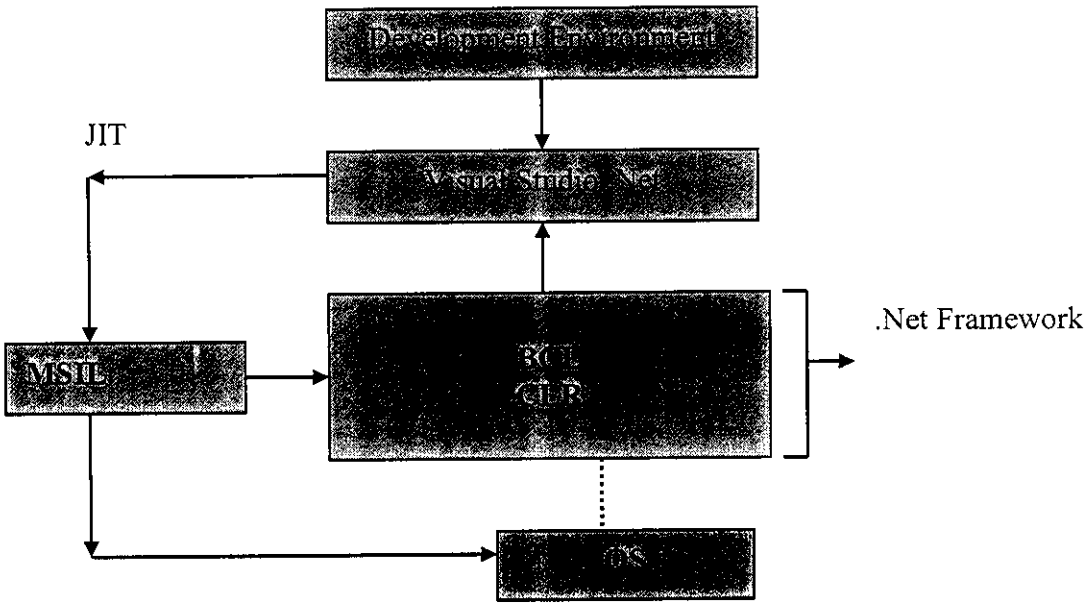

Figure 3.3.1.1

- MSIL → Microsoft Intermediate Language. A language used as the output of a number of compilers and as the input to a just-in-time (JIT) compiler. The common language runtime includes a JIT compiler for converting MSIL to native code.

- CLR → Common Language Runtime. The engine at the core of managed code execution. The runtime supplies managed code with services such as cross-language integration, code access security, object lifetime management, and debugging and profiling support.

- BCL → Base Class Library. Consists of program applications, all objects, types and classes.

COMPONENTS OF .NET FRAMEWORK

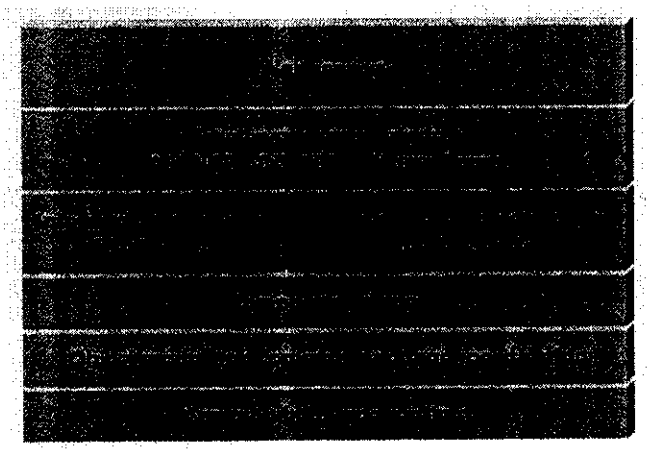

Figure 3.3.1.2

THE COMMON LANGUAGE RUN TIME (CLR)

The common language runtime is the foundation of the .NET Framework. It manages code at execution time, providing important services such as memory management, and remoting and also ensures more security and robustness. The concept of code management is a fundamental principle of the runtime code that targets the runtime is known as managed code, while code that does not target the runtime is known as unmanaged code.

THE .NET FRAMEWORK CLASS LIBRARY

It is a comprehensive, object-oriented collection of reusable type used to develop applications ranging from traditional command-line or graphical user interface (GUI) applications to applications based on the latest innovations provided by ASP.NET, such as Web Forms and XML Web services.

The .NET Frame work can be hosted by unmanaged components that load the common language runtime into their processes and initiate the execution of managed code, there by creating a software environment that can exploit both managed and managed

features. The .NET Framework not only provides several runtime hosts, but also supports the development of third-party runtime hosts.

Internet explorer is an example of unmanaged application that hosts the runtime (in the form of a MIME type extensions).using Internet Explorer to hosts the runtime to enables embeds managed components or windows forms controls in HTML documents.

FEATURES OF THE COMMAN LANGUAGE RUN TIME

The common language run time include manager memory; thread execution, code execution, code safety verification, compilation, and other system devices these are all run on CLR. The features are

- Security
- Robustness
- Productivity
- Performance

SECURITY

The run time enforces code access security. The security features of the run time thus enable legitimate internet deployed software to be exceptionally features rich. With regards to security, managed components are awarded varying degrees of trust, depending on a numbers of factors that include their origin to perform file access operations, registry access operations, or other sensitive functions.

ROBUSTNESS

The runtime enforces code robustness by implementing a strict type and code verification infrastructure called the common type system (CTS). The CTS ensures that all managed code is self describing. The managed environment of the run time eliminates many common software issues.

PRODUCTIVITY

The run time also accelerates developer productivity. For example, programmers can write applications in the development language of choice, yet take full advantage of the run time, the class library, and components written in other languages by other developers.

PERFORMANCE

The run time is designed to enhance performance. Although the common language run time provides many standard run tine services, managed code is never interpreted. A feature is called just in time (JIT) compiling enables all managed code to run in the negative machine language of the system on which it is executing. Finally, the run time can be hosted by high performance, server side applications, such as Microsoft SQL sever and internet information services (IIS).

VB.NET 2005

VB.NET 2005 comes with a number of enhancements. The IntelliSense Code snippets, the Windows Forms designer updates, IntelliSense filtering, debugger data tips, exception Assistant etc make the software a pleasure to work with. The language has been spruced up with generics, unsigned types, Operator overloading etc.

The My Namespace is the most significant enhancement that provides a single reference to commonly used functionalities within the .NET framework. It includes classes like Application, Computer, Forms, Resources, Settings and Users. This enables users to ping a computer with a simple line of code or play a audio file with a one line code.

CHAPTER 4

SYSTEM DESIGN AND DEVELOPMENT

4.1 ELEMENTS OF DESIGN

System Design is the most creative and challenging phase in the development of a software system. Design implies to a description of the final system and the process by which it is developed. The first step is to determine what input data is needed for the system and then to design a database that will meet the requirements of the proposed system. The next step is to determine what outputs are needed from the system and the format of the output to be produced.

During the design of the proposed system some areas where attention is required are:

- What are the inputs required and the outputs produced?
- How should the data be organized?
- What will be the processes involved in the system?
- How should the screen look?

The steps carried out in the design phase are as follows:

- Modular Design
- Input Design
- Output Design
- Database Design

4.1.1 MODULAR DESIGN

It is always difficult for any System Development team to grasp a system without breaking it into several subsystems/modules. These subsystems/modules will be a part of the original system, yet they will be independent in the sense that they will incorporate within them the major functionalities of the proposed system.

A software system is always divided into several subsystems and modules which make it easier to develop and perform tests on the whole system. The subsystems are also known as the modules and the process of dividing an entire system into subsystems/modules is known as Decomposition.

The modules identified for the proposed Disk Management system are as below:

- **Disk Catalog**
  - ✓ Reading
  - ✓ Searching
  - ✓ Update
  - ✓ Grouping

- **Data Recovery**
  - ✓ Recover Deleted Data
  - ✓ Lost Data
  - ✓ Lost Drive Module
  - ✓ CD/DVD Recovery Module

Reading Module:

This module is to add disk data details virtually that contain the dir structure of the entire disk. It is difficult to find out the contents of each and every that we are having, if we want to know about the details about each and every disk we have to put that disk into the drive to know. This is a more time consuming process and the data that is needed by the user may be available at the last disk. So, to eliminate the time constraint we are giving a label to each and every disk and the contents of the disk are displayed in the index and they are ordered through the label number that will be in correspondence to the each and every disk that is available. By this process the disk can be easily read and we can retrieve the contents of each disk without inserting the disk into the drive.

Search Module

This module is used to search catalog for files and directory. Whenever we want to search something in a file or in a directory we usually give the full name or only the part of the name to search the content in the file or directory. The users which are using the system can search via the artists, albums, play lists, genre, and composers and so on. Since the search is made via the above mentioned things, the search will be so faster that the user can able to retrieve the data that he desires in a minute or so.

Grouping Module

This module is to organize the disk image in various categories. The data that are to be stored will be stored in the disk and we can save the image in the different formats and extensions that are available. The grouping module specifies that the data or the image that are to be stored in the disk is in an accepted format to the user.

Update Module

This module is to update the disk image previous add disk. There will be lot of images that are previously available in the disk and if you want to add any image to the disk we can add it in a way that it can be easily added to the disk. All the disk images that are available in the disk will be in any of the format that has been saved by the user.

Recover Deleted Data

This module is to recover the deleted data from the disk and save the data on the different disk or drive. When we are working in the system and if we are accidentally delete some data that is sensitive and if we want to retrieve it means then it is next to impossible. So, in this way many data are lost accidentally and to overcome this problem the DMS helps you to recover the data that are lost due to accidental deletion or may be some times due to the system crash or power shutdown. Sometimes the data can't be retrieved because the disk that is used to store the data may not be inaccessible to the user.

Lost Data

This module is used to recover the quick formatted disk data, data loss due to system crash, recover and save the data on different drive. The problem here is that the data here is lost due to the system crash or may be sometimes because of proper backup the system may come to an illegal abortion and we will not be saving the data in a correct format or sometimes the data that has been saved may be lost due to some unknown factors like a virus may affect a system or a bad sector may be formed and this will lead to the loss of data. The DMS is suitable software for these kinds of purposes. i.e. we can easily retrieve the lost data.

Lost Drive Module

This module is to access the inaccessible drives, files, and to recover and save it to another disk or drive. Sometimes the drive or files which we are accessing may not be accessible and it will be difficult for us to retrieve the documents from that. The drive or files may be inaccessible because there are many reasons that the user may not know why the data has been lost and why the drive or file cannot be easily accessible by the user. So, to overcome the problem of inaccessibility and to easily access the inaccessible drive or file we will use this DMS software to overcome the difficulty that are faced when the drive or file get inaccessible.

CD/DVD Recovery Module

This module is to recover the data from scratched cd / dvd disks and save it to another disk or drive like hdd, flash drives. Sometime without the knowledge of us we may some scratch the CD/DVD or due to some external reasons the CD or DVD may got scratched and so we can't access the data from the scratched disk. But this DMS gives you the provision that the scratched CD or the DVD can be accessed so that we can get the data that is there in the disk. The data that is available in the scratched part can't be accessed but the remaining sectors in the disk other than the scratched ones can be easily accessed by the user.

4.2 SYSTEM DESIGN

4.2.1 Input Design

Input Design is the part or overall system design, which requires very careful attention. Often the collection of input data is the most expensive part of the system. In terms of both the equipment used and the number of people involved in it is the point of most contracts for the user with the computer system and it is prone to error. If data going into system is incorrect, then the processing the output will magnify these errors. Input design is the process of converting an external user oriented description of the input system into a machine-oriented format.

4.2.2 Output Design

One of the most important features of an information system for users is the output that is produced. Without quality output the entire system might appear to be so unnecessary that users will avoid using it, possible causing the system to fail, right output must be developed while ensuring the output element is designed so that people will find the system easy to use effectively.

Output screens are the tools to convey information to the users since the design of the output screen is very important for attracting the users; the output screens are designed in such a way that it is very interactive and informative. The outputs from the computer systems are primarily to communicate the results of processing to users.

The output screen in this project gives information when the particular jobseeker is short listed. Here we can get information about the organization and their statistics. The above information is displayed on an output screen with appropriate format. The software generates an acknowledgement on successful submission of data.

4.2.3 Database Design

A database is a collection of inter-related data stored with minimum redundancy to serve many users quickly and efficiently. The general objective of database design is to make the data access easy, inexpensive and flexible to the user. An elegantly designed database can play a strong foundation for the whole system.

The details about the relevant data for the system are first identified. According to their relationship, tables are designed through the following method

4.2.3.1 Normalization

✓ Database designed based on the E-R model may have some amount of

- ❖ Inconsistency
- ❖ Uncertainty
- ❖ Redundancy

✓ To eliminate these draw backs some refinement has to be done on the database.

- ❖ Refinement process is called Normalization
- ❖ Defined as a step-by-step process of decomposing a complex relation into a simple and stable data structure.
- ❖ The formal process that can be followed to achieve a good database design
- ❖ Also used to check that an existing design is of good quality
- ❖ The different stages of normalization are known as "normal forms"
- ❖ To accomplish normalization we need to understand the concept of Functional Dependencies.

First Normal Form: 1NF

- ❖ A relation schema is in 1NF
- ❖ if and only if all the attributes of the relation R are atomic in nature.
- ❖ **Atomic:** The smallest level to which data may be broken down and remain meaningful

Second Normal Form: 2NF

- ✓ A Relation is said to be in Second Normal Form if and only if :
  - ❖ It is in the First normal form, and
  - ❖ No partial dependency exists between non-key attributes and key attributes.
- ✓ An attribute of a relation R that belongs to any key of R is said to be a prime attribute and that which doesn't is a non-prime attribute
- ✓ To make a table 2NF compliant, we have to remove all the partial dependencies
- ✓ All partial dependencies are eliminated

  DMS tables are normalized up to 2 Normal Form

Merits of Normalization

- ❖ Normalization is based on a mathematical foundation.
- ❖ Removes the redundancy to a greater extent. After 3NF, data redundancy is Minimized to the extent of foreign keys.
- ❖ Removes the anomalies present in INSERTs, UPDATEs and DELETEs.

Demerits of Normalization

- ❖ Data retrieval or SELECT operation performance will be severely affected.
- ❖ Normalization might not always represent real world scenarios.

4.2.3.2 TABLE STRUCTURE

DESIGN CONVENTIONS USED

1. Appropriate words that describe the table should be used.
2. Words used to describe the table should be separated with an Underscore '_'.
3. No special character other than an underscore is used in formulating a table name.
4. No number should be used anywhere in the table name string.

TABLES

Table Name: Catdet

Description: This table stores all the information about the Disk Catagory details.

Column Name	Data Type	Key	Length	Null
CNo	Number	Primary Key	10	No
Name	Varchar		30	No

Table 4.2.3.2.1 Catagorydetails

Table Name: Locdet

Description: This table stores all the information about the Disk Location details.

Column Name	Data Type	Key	Length	Null
LNo	Number	Primary Key	10	No
Name	Varchar		30	No

Table 4.2.3.2.2 Locationdetails

Table Name: Diskdet

Description: This table stores all the information about the Disk Data details.

Column Name	Data Type	Key	Length	Allow Nulls
DskNo	Number	Primary Key	10	No
DskNam	Number		25	No
FileName	Varchar		50	No
Ext	Varchar		5	No
Path	Varchar		100	Yes
Size	Number		10	No
Date	Date		8	No
Time	Time		6	No
Attribute	Varchar		4	Yes
CatId	Number	Foreign Key	10	Yes
FlagId	Number	Foreign Key	10	Yes

Table 4.2.3.2.3 Diskdetails

4.3 DIAGRAMS

4.3.1 Data Flow Diagram (DFD)

A data flow diagram is graphical tool used to describe and analyze movement of data through a system. These are the central tool and the basis from which the other components are developed.

The transformation of data from input to output, through processed, may be described logically and independently of physical components associated with the system. These are known as the logical data flow diagrams.

The physical data flow diagrams show the actual implements and movement of data between people, departments and workstations. A full description of a system actually consists of a set of data flow diagrams.

4.3.2 USE CASE DIAGRAMS

The usecase is to present a graphical overview of the functionality provided by a system in terms of actors, their goals represented as usecases and any dependencies between usecases.

The diagram below gives the overall context of the Disk Catalog. The users of the system are depicted below.

USECASE: DISK CATALOG

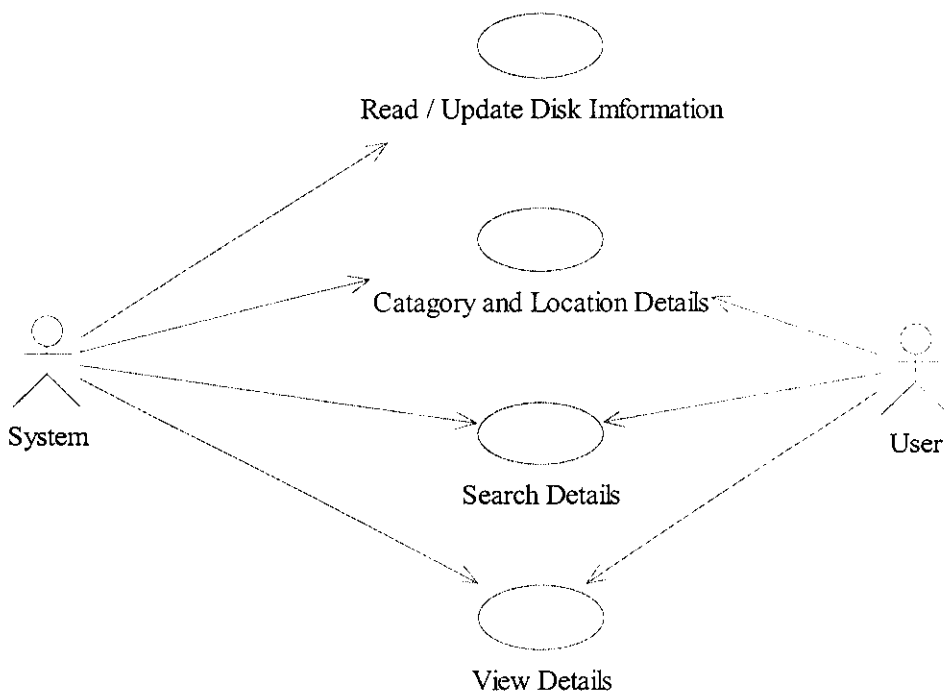

Figure 4.3.2.1 CATALOG

USECASE: CATEGORY AND LOCATIONS

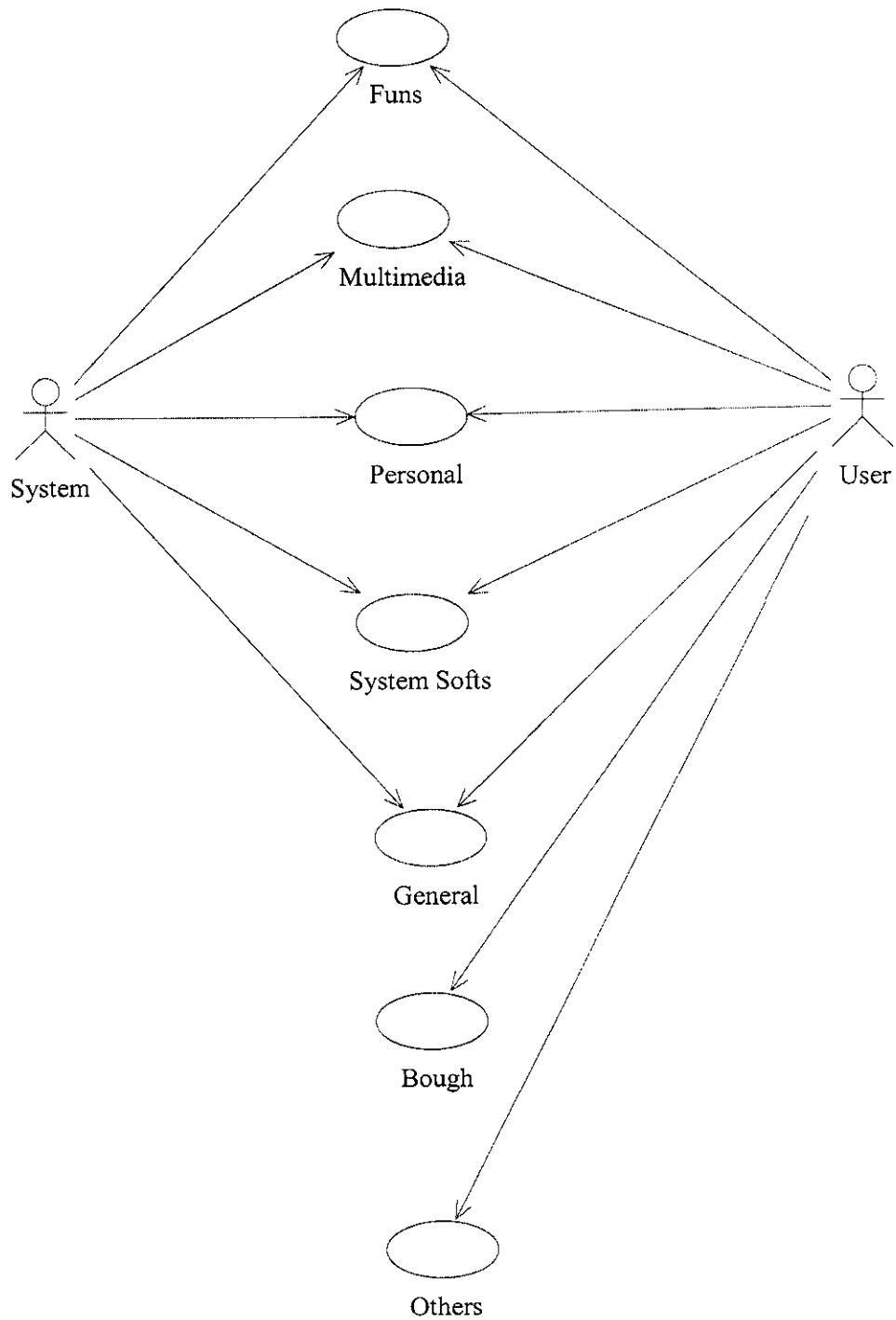

Figure 4.3.2.2 Category and Locatoions

USECASE: SEARCH

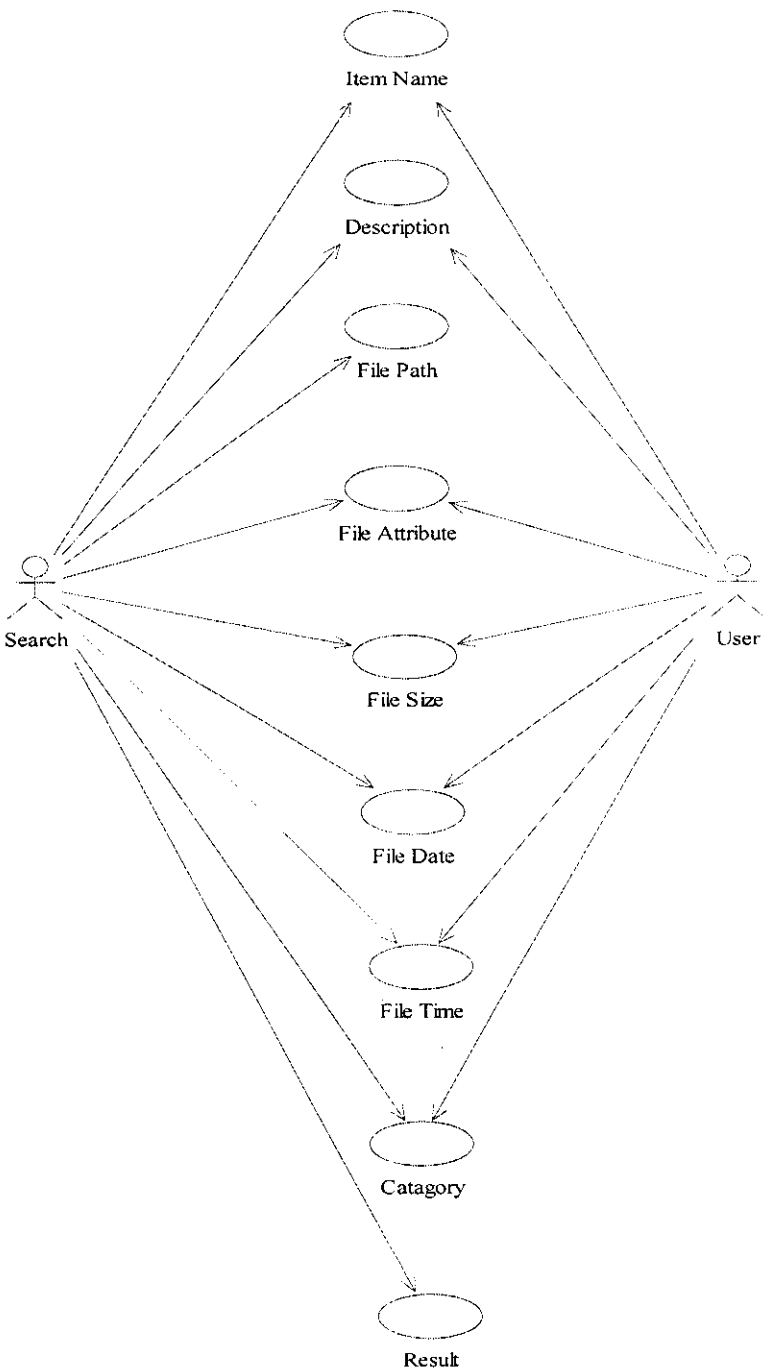

Figure 4.3.2.3 Search

USECASE: DISK RECOVERY

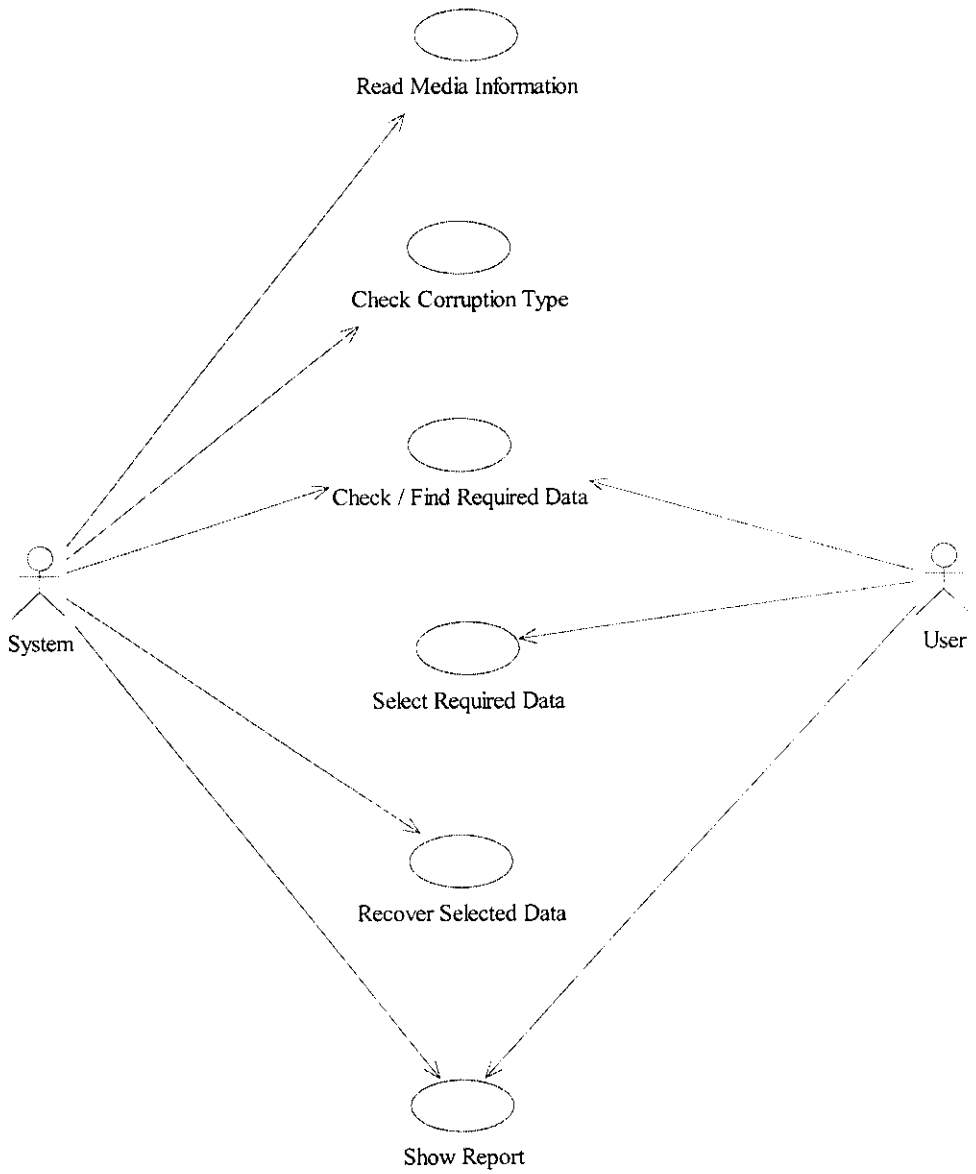

Figure 4.3.2.4 Data Recovery

4.3.3 SEQUENCE DIAGRAM

SEQUENCE DIAGRAM: CATALOG

A sequence diagram shows, as parallel vertical lines, different processes or objects that live simultaneously.

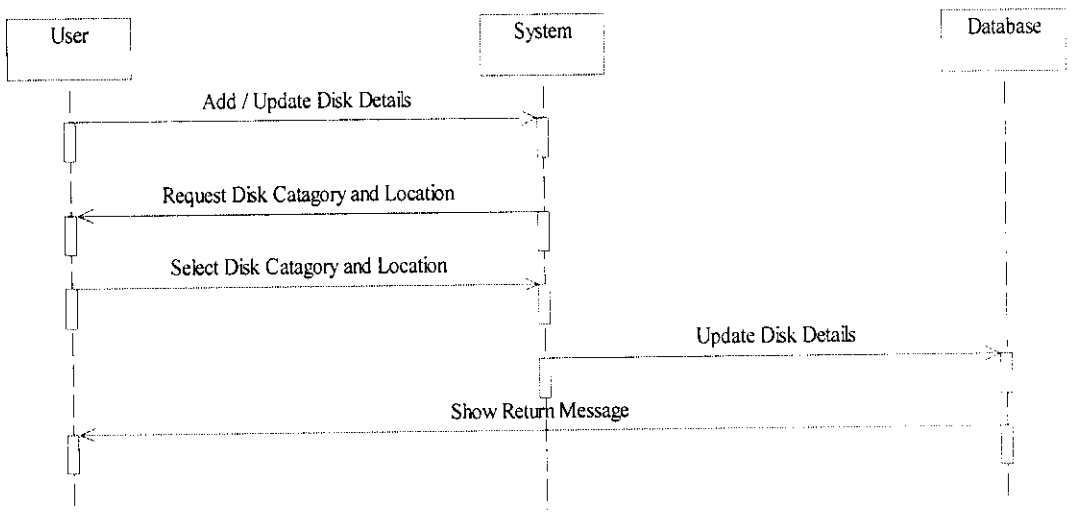

Figure 4.3.3.1 Catalog

SEQUENCE DIAGRAM: CATALOG SEARCH

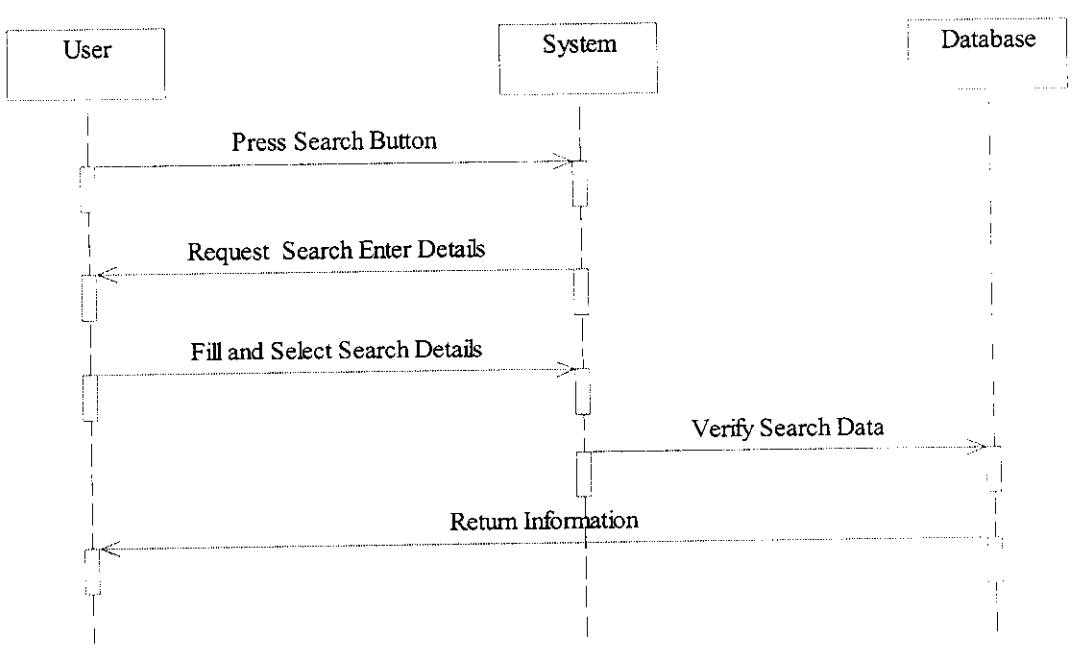

Figure 4.3.3.2 Search

SEQUENCE DIAGRAM: DATA RECOVERY

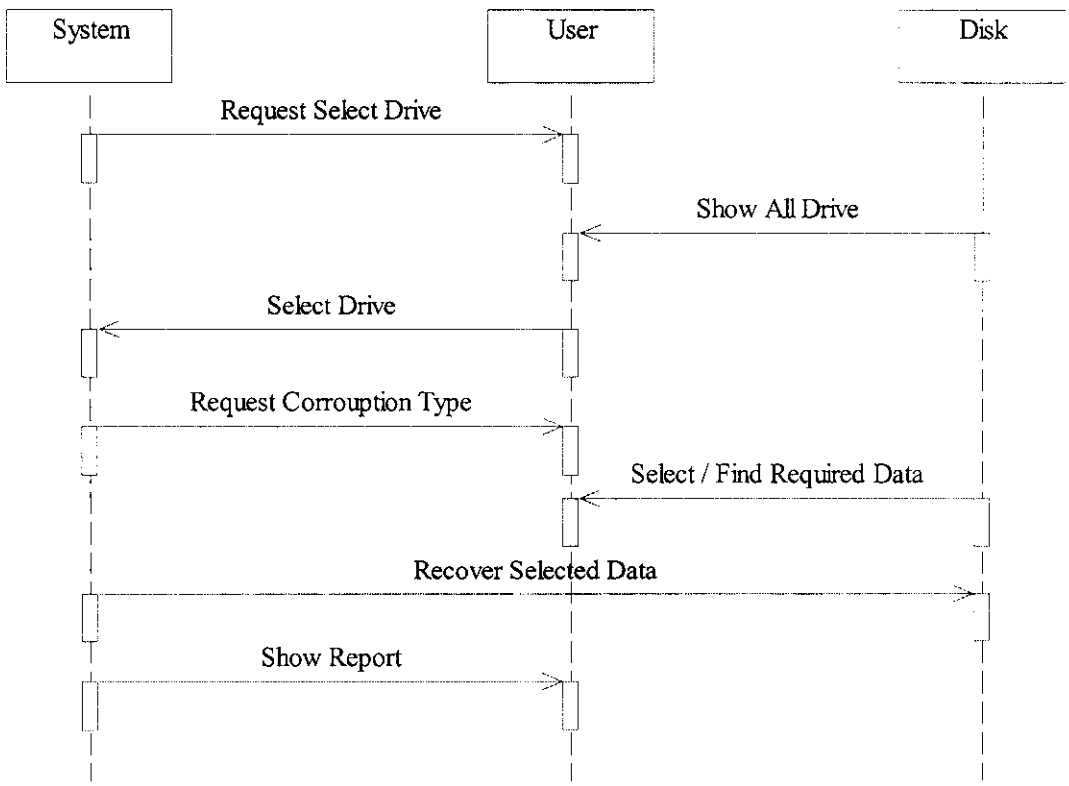

Figure 4.3.3.3 DataRecoverySearch

4.3.4 COLLABORATION DIAGRAM

This diagram expresses a single scenario like the sequence diagram, but in this case the focus is not on time but rather object instances.

COLLABORATION DIAGRAM: CATALOG

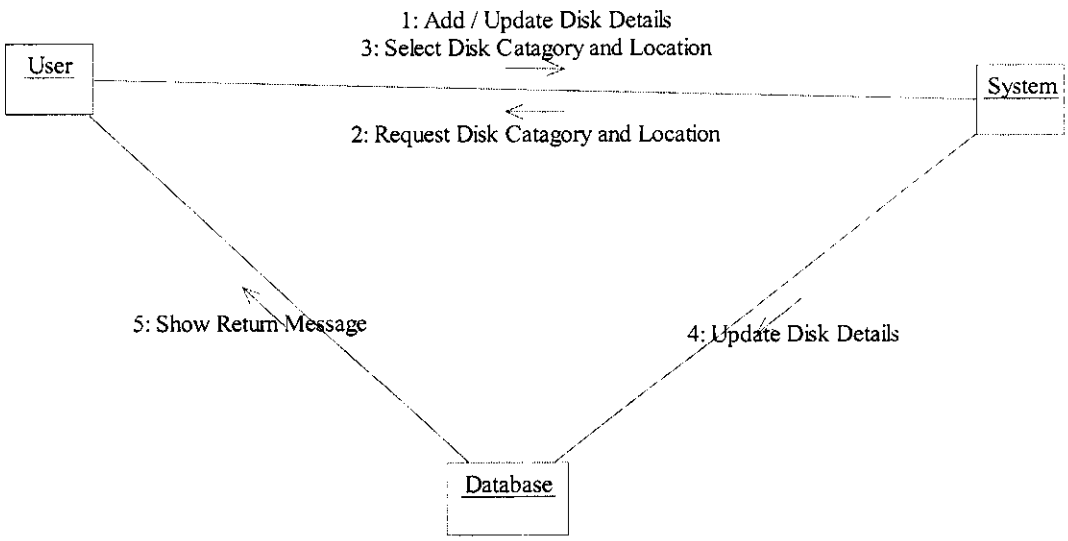

Figure 4.3.4.1 Catalog

COLLABORATION DIAGRAM: CATALOG SEARCH

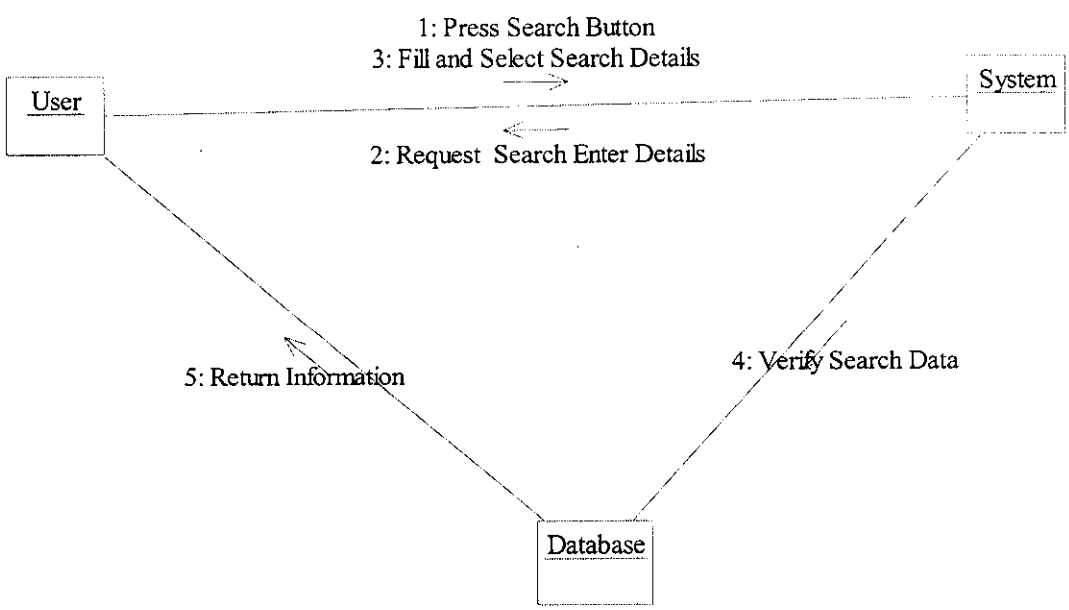

Figure 4.3.4.2 Catalog Search

COLLABORATION DIAGRAM: DATA RECOVERY

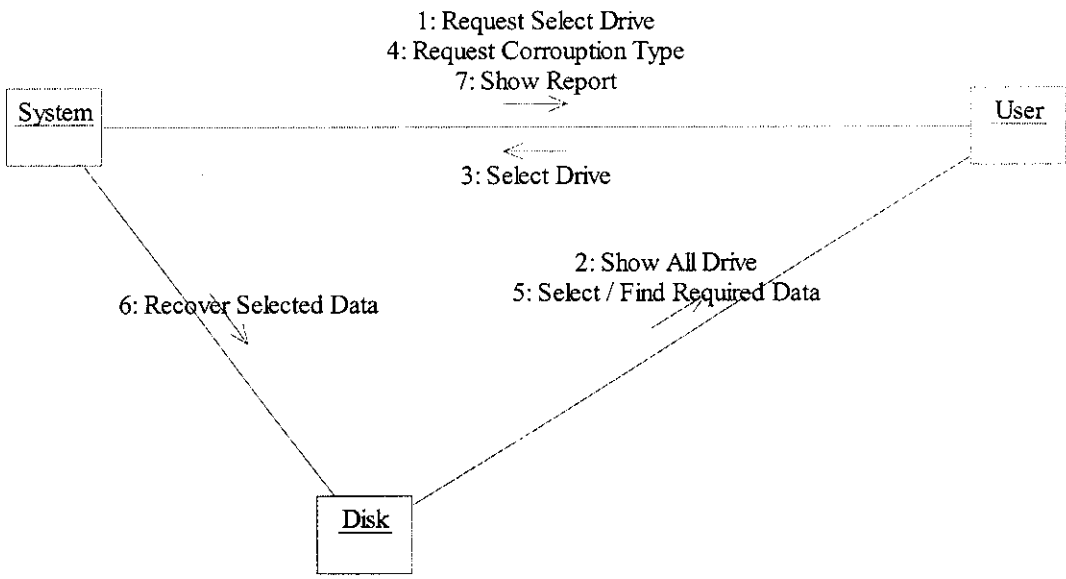

Figure 4.3.4.3 Data Recovery

4.3.5 ACTIVITY DIAGRAM

Activity diagram is a flow chart on steroids. This diagram is great for expressing process flow.

ACTIVITY DIAGRAM: DISK CATALOG

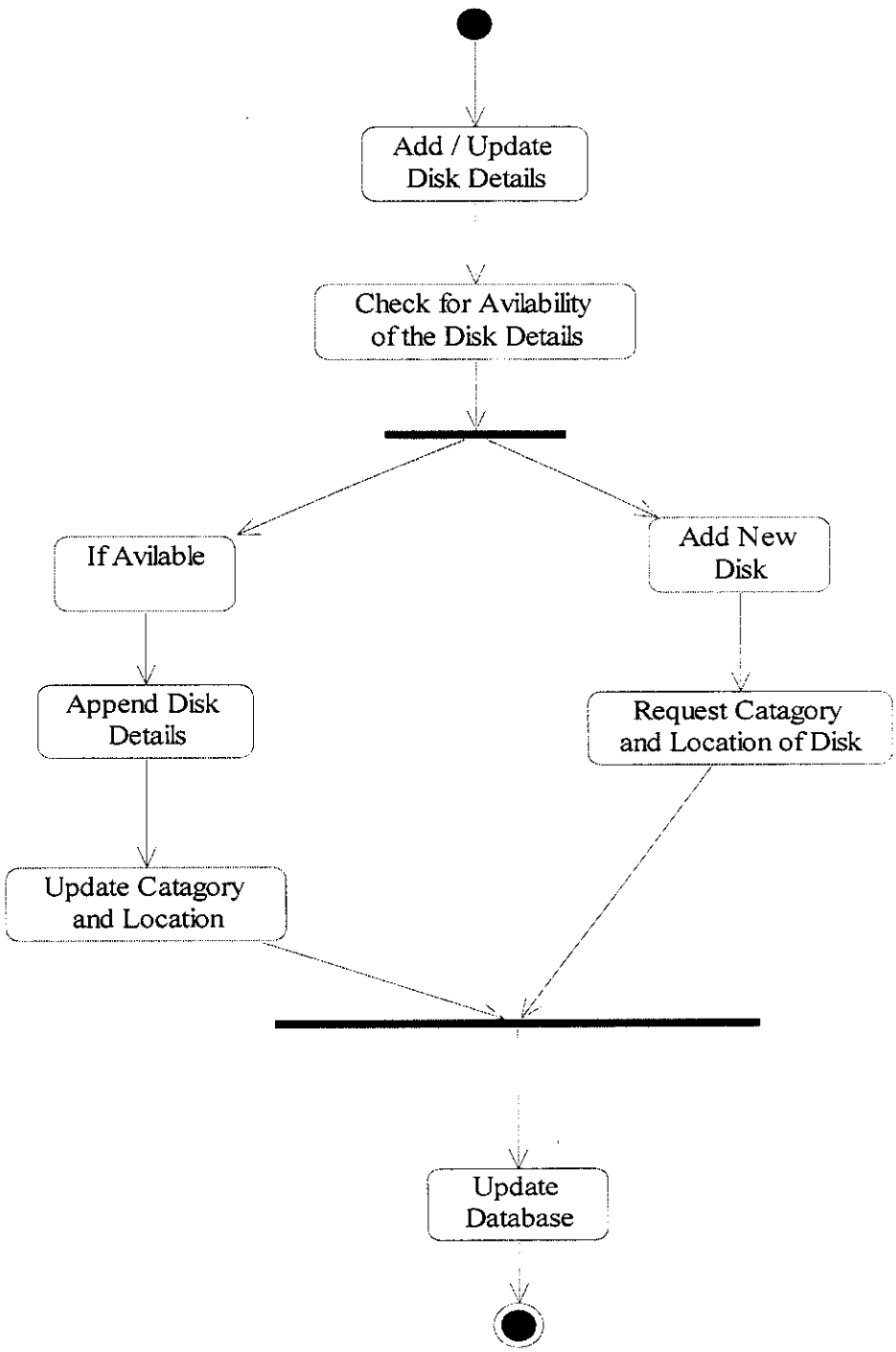

Figure 4.3.5.1 Catalog

ACTIVITY DIAGRAM: DATA RECOVERY

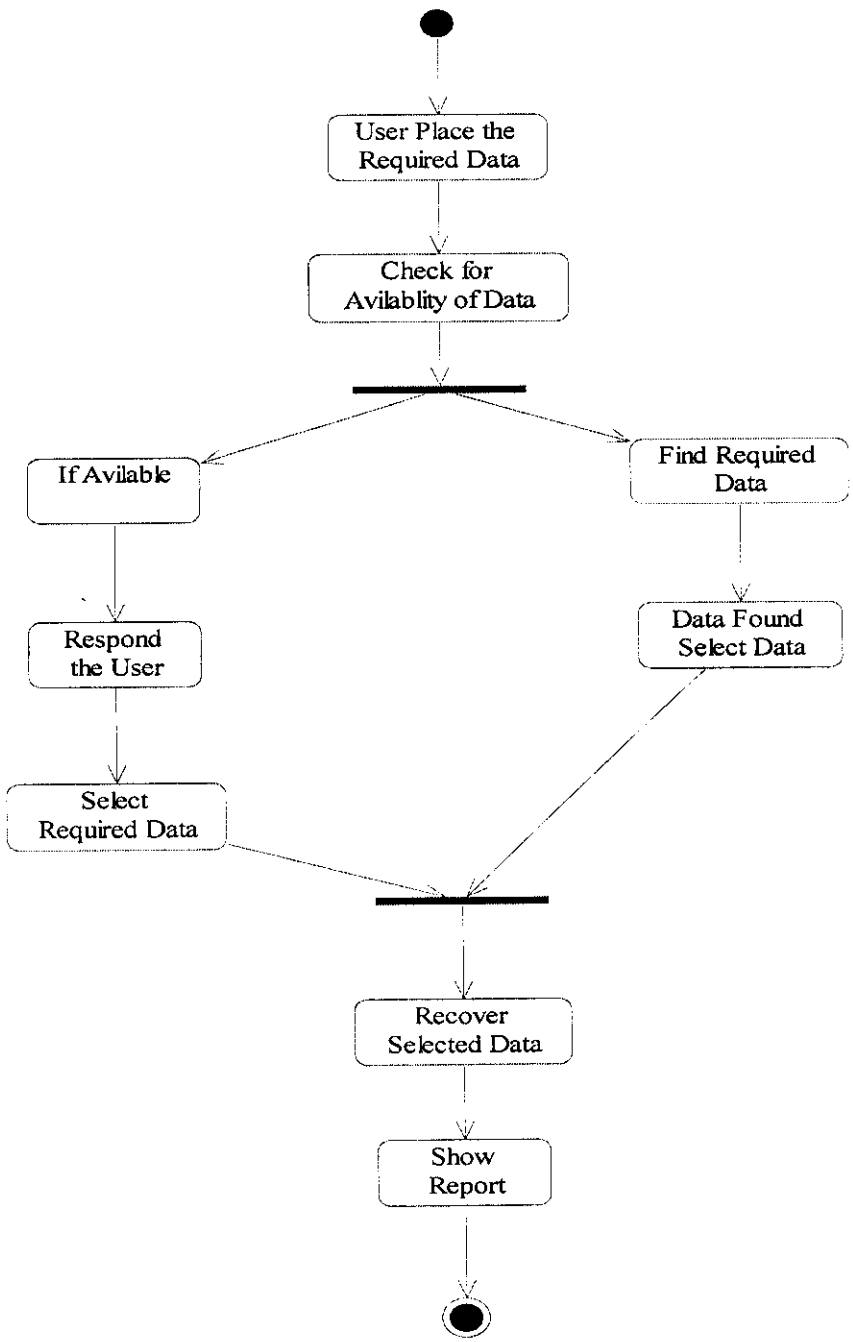

Figure 4.3.5.2 Data Recovery

CHAPTER 5

SYSTEM TESTING AND IMPLEMENTATION

System Implementation is the part of the software engineering life cycle, where, the design artifacts are converted to a working application. Coding is done in this stage using an apt framework and programming language, which would solve the specific problem the best way. Once the design is coded into a working application, it has to be verified, validated and tested in detail. The tested product if successful is deployed in the user environment.

5.1 SYSTEM VERIFICATION

System Verification answers the question "Am I building the product right?" It includes the review of interim work steps and interim deliverables during a project to ensure they are acceptable. Verification also determines if the system is consistent, adheres to standards, uses reliable techniques and prudent practices, and performs the selected functions in the correct manner. In data access, it verifies whether the right data is being accessed, in terms of the right place and in the right way.

5.2 SYSTEM VALIDATION

Validation answers the question "Am I building the right product?" This checks whether the developer is moving towards the right product, whether the development is moving towards the actual intended product that was agreed upon in the beginning. Validation also determines if the system complies with the requirements and performs functions for which it is intended and meets the organization's goals and user needs. It is traditional and is performed at the end of the project. In data access, it checks whether we are accessing the right data, in terms of data required to satisfy the requirement.

5.3 TESTING

This testing strategy examines the logic of the program. The system is tested; and all the functions are performed smoothly without any errors. By taking various kinds of test data, above testing was performed. Preparation of test data plays a vital role in the system testing. After preparing the test-data, the system under study is tested using test data. While testing the system by using test-data, errors are again uncovered and corrected by using above testing steps and corrections are noted for the future use.

The main types of tests carried out on Disk Management System are:

- Unit Test
- Integration Test
- System Test

5.3.1 SYSTEM TESTING

The aim of any software development is to create a bug - free, reliable and secure system that provides solutions to users specified requirements. To ensure this, a systematic test plan is mandatory. A test strategy exhaustively covers the objects, scope, staffing resources and documentation.

After the completion of the coding of the project, the developed system was tested on real–time data to check the accuracy of the data manipulations and their associated calculations.

The programs were tested with sample data supplied by the user and necessary corrections to the programs were carried out if any errors were found. All the reports are to be checked and approved by the user.

The system is very user - friendly with display and messages to assist the user wherever necessary. The users are trained to handle the system more effectively. The operational manuals supplied along with the computer system by the manufacturers are to be referred to by the user as and when he needs it.

Systematic testing involves taking the design document and creating a test plan turning its functionality descriptions into functionality tests. Every item in the design document exercised thoroughly to ensure that it works correctly. Ideally, the test plan would be created at the same time as the design documentation.

A programmer, a user or anyone else can execute the test plan. All that's required is following the plan closely, doing what it says, and ensuring that the results are as expected.

A serious of testing is performed for the proposed system before the proposed system is ready for user acceptance testing.

Black box testing treats the software as a black-box without any understanding of internal behavior. It aims to test the functionality according to the requirements. Thus, the tester inputs data and only sees the output from the test object.

White box testing, however, is when the tester has access to the internal data structures, code, and algorithms. White box testing methods include creating tests to satisfy some code coverage criteria.

5.3.2 UNIT TESTING

Unit testing focuses verification efforts on the smallest unit of the software design of the module. This is known as module testing. This is carried out during the programming stage itself. In this step, each module is found to be working satisfactorily as regards to the expected output from the module.

5.3.3 INTEGRATOIN TESTING

After performing the validation, testing the next step is output testing of the proposed system. Since no system could be useful if it does not produce the required output in specific format. The output formation on the screen was found as correct to the format that was designed during the system design time according to the user needs. For the hard copy also, the output comes as the specified requirements by the user

Module or Unit Testing is the process of testing all the program units that make up a system. Unit testing focuses on an individual module thus allowing one to uncover all the errors made logically and while coding in the module.

In Disk Management System each page is tested separately as a unit. Initially the flow of control and data through that page is checked. When considering a module as a unit, the flow of data and control through the whole module is tested. The result is stored in the test plan. In a page, each control is further tested in unit testing. The process is done in all the pages of the system. Once the errors are rectified, the testing procedure is repeated with same test cases to ensure this hasn't produced new errors. Hence this is a continuous process.

5.4 IMPLEMENTATION

The system is developed in such a way that the existing facilities are enough for implementation. The hard ware facilities are made sufficient enough to implement the newly developed application.

The first step in implementation is to get approval from the users. The data entry through various screens and reports that the system is capable of producing is shown to the users.

When the Administrator is finally satisfied with system it is now ready to implement the system in the concern. The system has been successfully implemented in the organization with full cooperation from the management. Finally the system is handed over to the organization.

CHAPTER 6

CONCLUSION AND FUTURE ENHANCEMENT

6.1 CONCLUSION

The Disk Management System (DMS) enables the project team to get rid of a very tedious and time consuming process which has been followed so far. The searching, organizing, storing and recovery of the data is made easier so that the user can depend upon this product whenever a circumstance occurs where the searching and recovery had to be done in a quick time.

The index generated by DMS has all the contents of each and every drive and CD's where the user can search the CD via the index. He/she need not go and search in each and every thing. The index contains a fully fledged feature that it can be searched via the artists, albums, genre, composers and a lot more.

The data retrieval from an almost impossible situation is the key feature in this DMS where the corrupted data can be retrieved easily in a feasible manner. So, there is no need of using separate software or product for data retrieval or data storage. By this DMS itself a user can be able to search the needed things for him and he can also obtain the retrieval of any corrupted data due to disk failure or power shutdown.

6.2 FUTURE ENHANCEMENT

The following features listed below if introduced could benefit the users of the system.

- Add additional network support for drives and servers with a shared-level access. When browsing the network tree, program will now always try to connect to the selected server or network drive
- Add additional languages to support all languages
- We can also lend the program to others

APPENDICES

Disk Management System

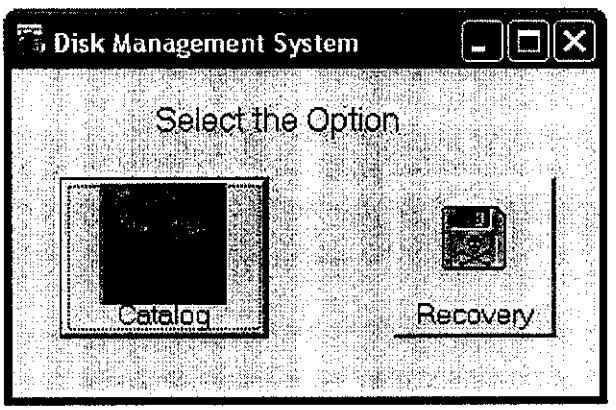

Figure 7.1 DMS Option

7.2 Catalog:-

File Menu:

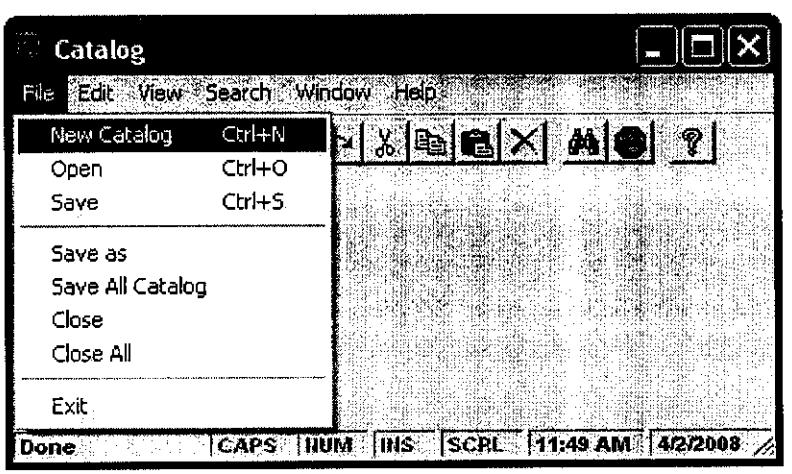

Figure 7.2.1 FileMenu

Edit Menu:

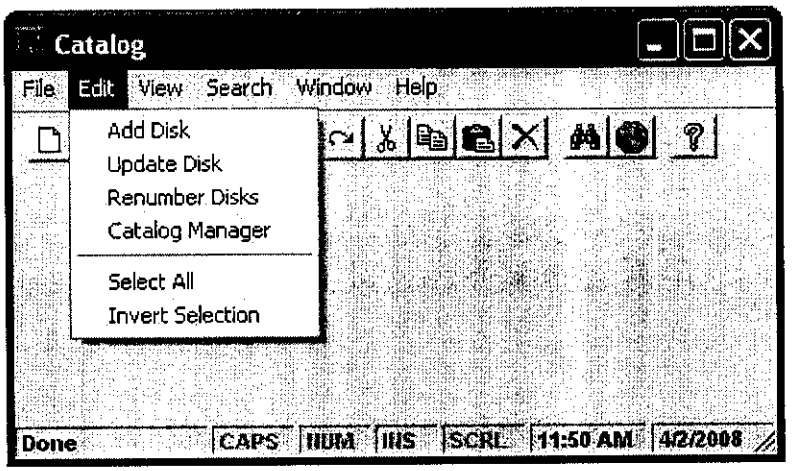

Figure 7.2.2 EditMenu

View Menu:

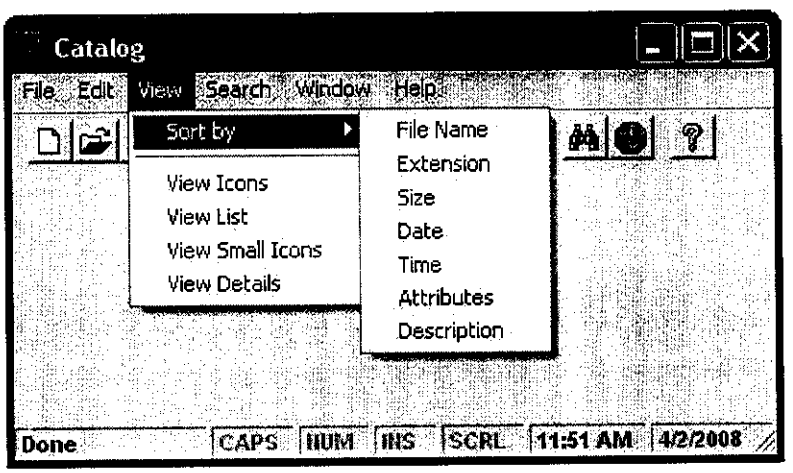

Figure 7.2.3 ViewMenu

Search Menu:

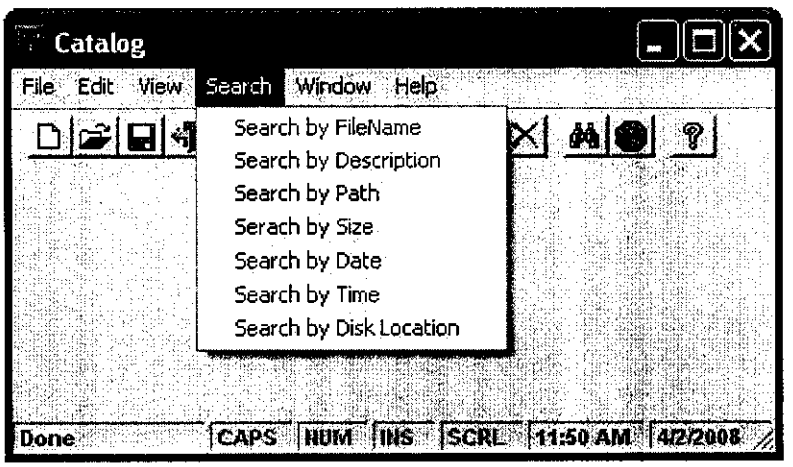

Figure 7.2.4 SearchMenu

Window Menu:

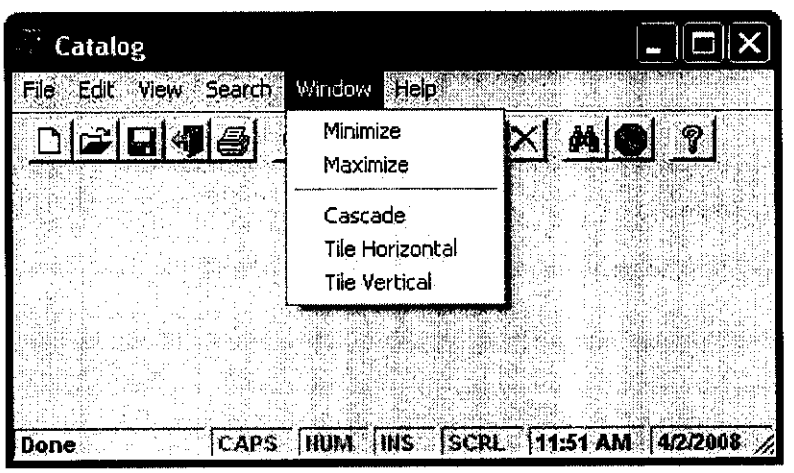

Figure 7.2.5 WindowMenu

Add or Update Data:

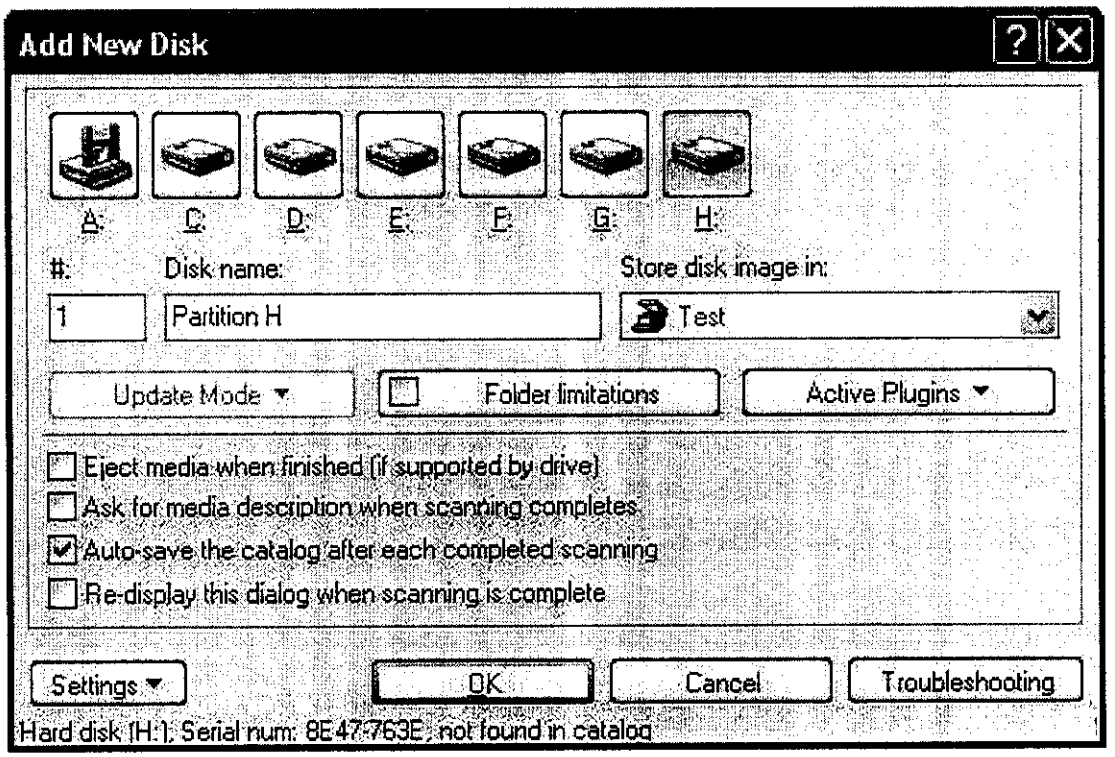

Figure 7.2.6 AddorUpdate

Save Catalog:

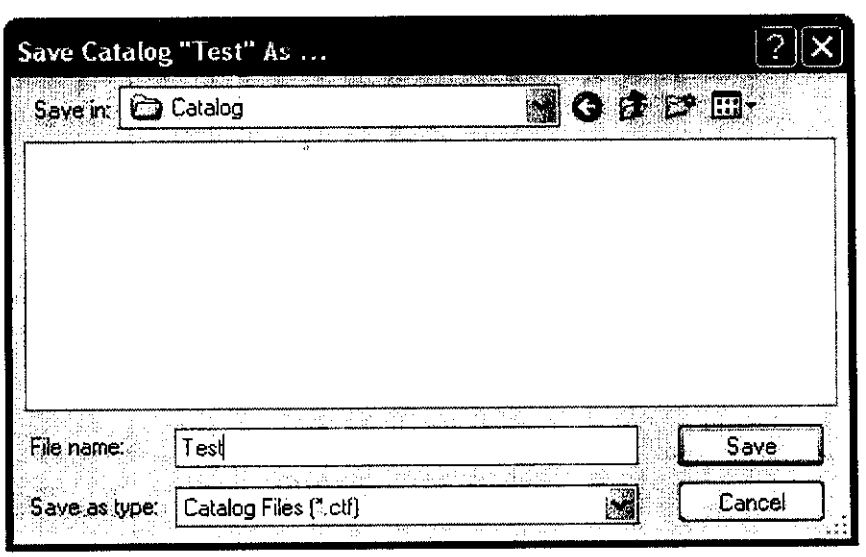

Figure 7.2.7 SaveCatalog

Catalog Show:

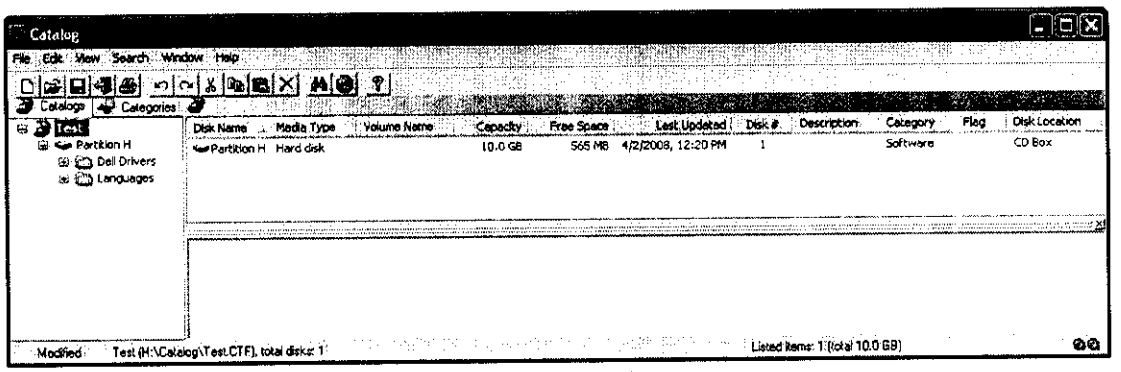

Figure 7.2.8 Catalog Show

Catalog View by Details:

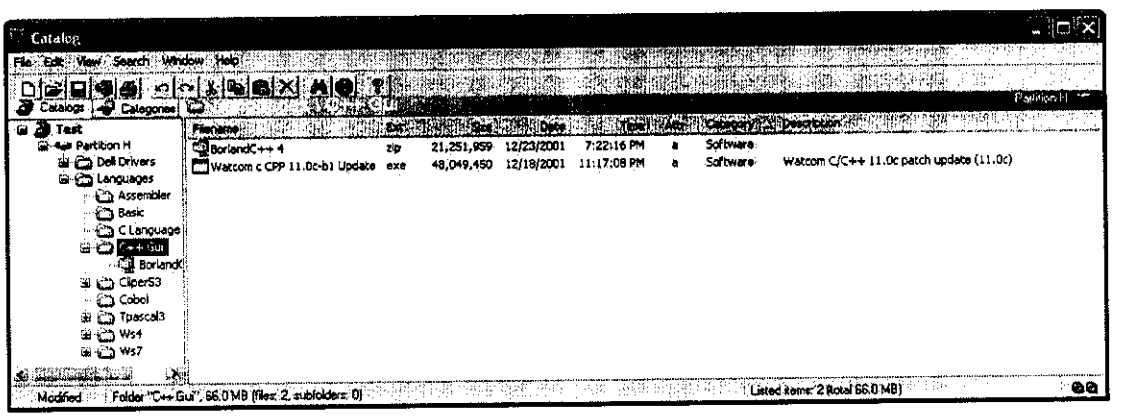

Figure 7.2.9 CatviewbyDet

View by Large Icons:

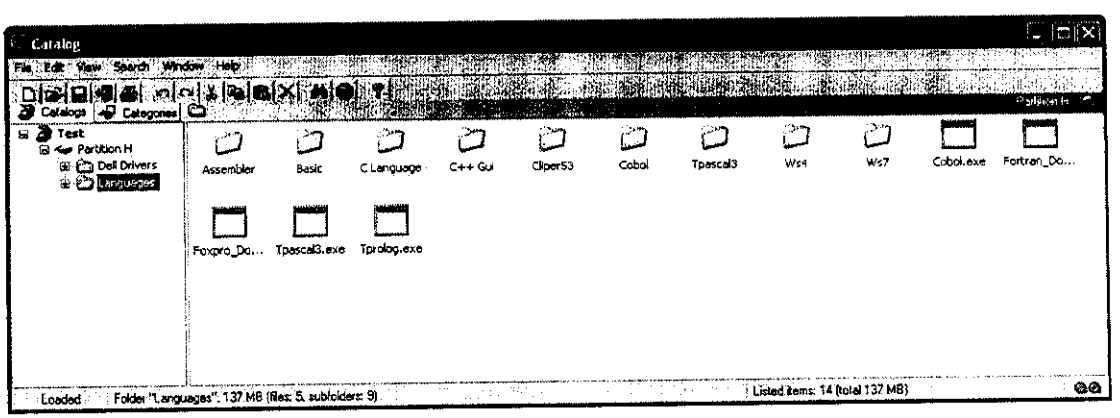

Figure 7.2.10 CatviewbyIco

View by Small Icons:

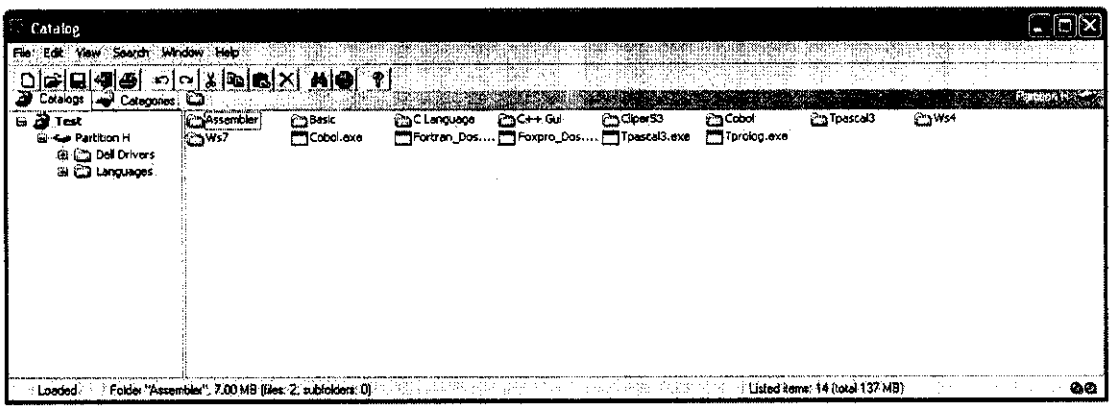

Figure 7.2.11 CatViewbySmallIco

View by List:

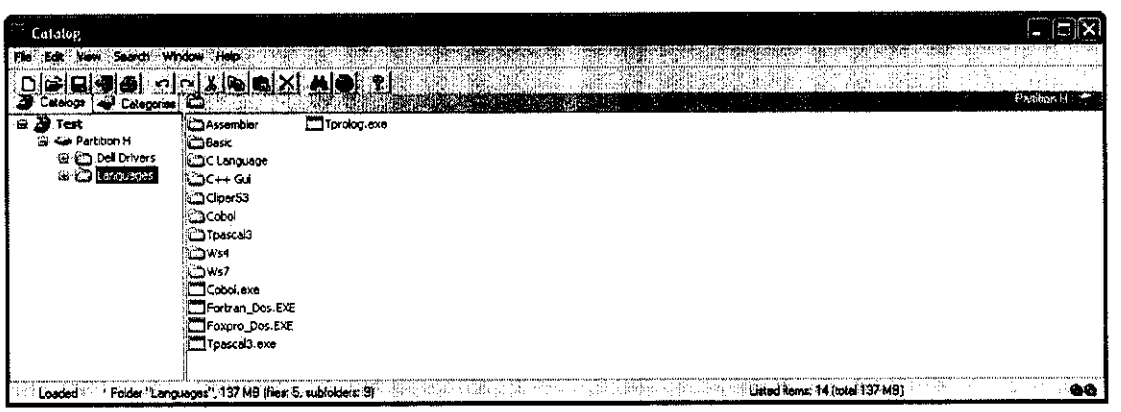

Figure 7.2.12 CatViewbyList

Search Options:

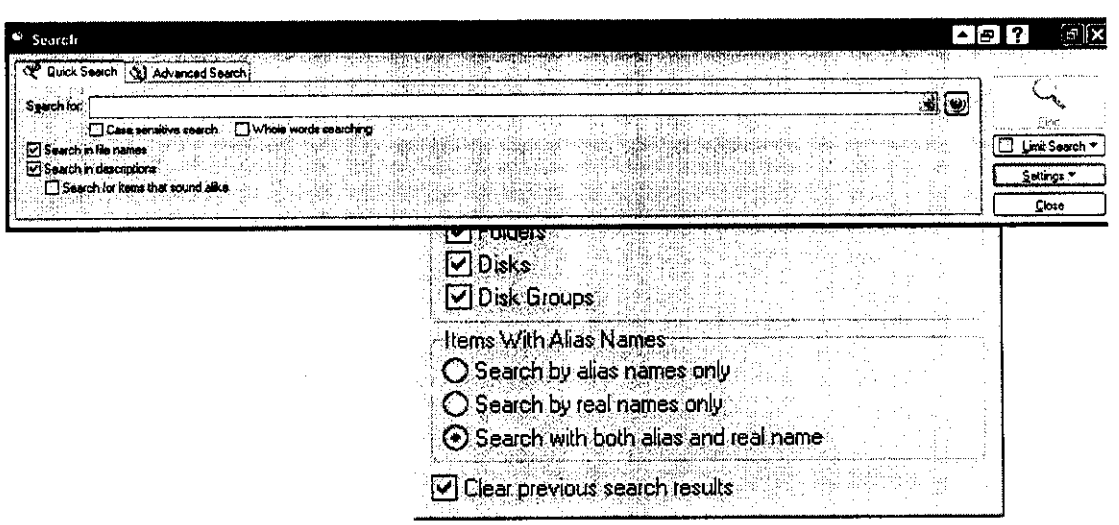

Figure 7.2.13 SearchOptions

Advanced Search Options

Search by Itemname:

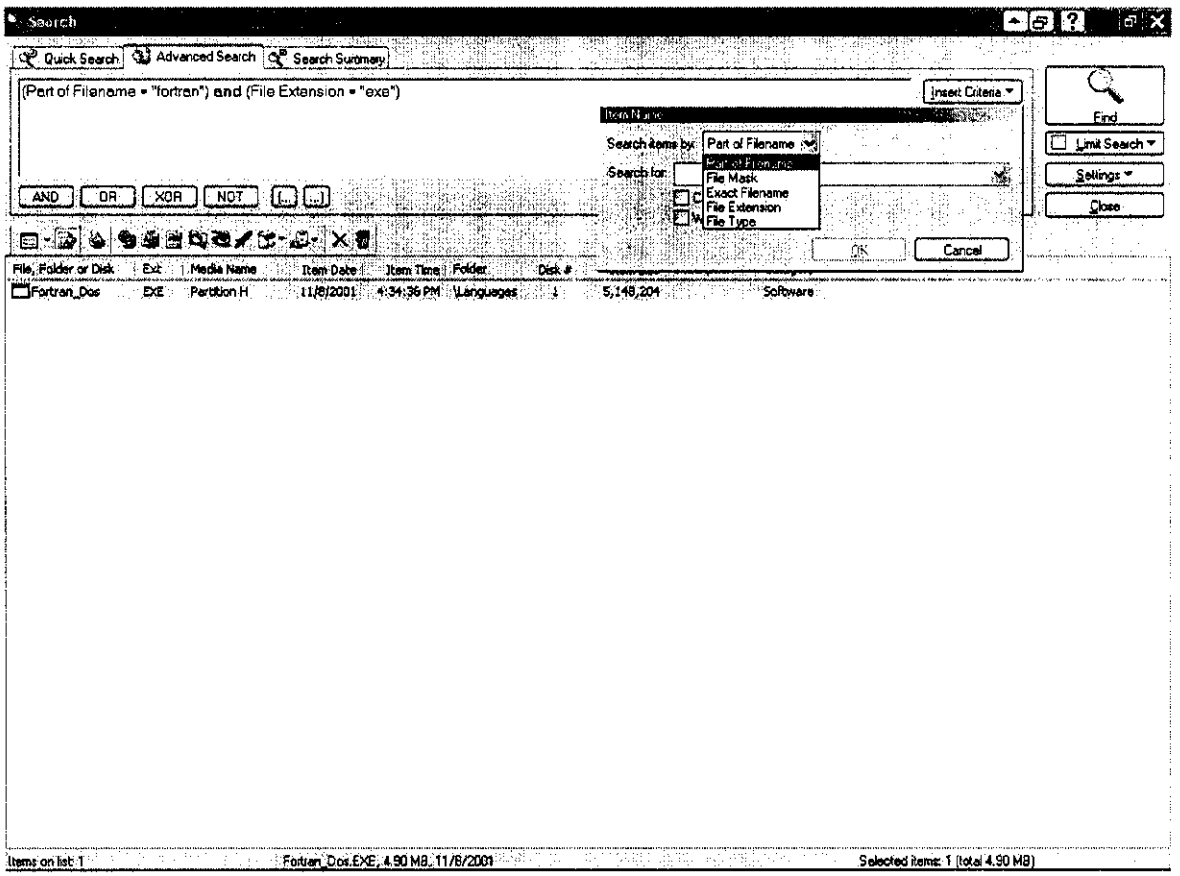

Figure 7.2.14 SearchbyItemname

Search by Attributes:

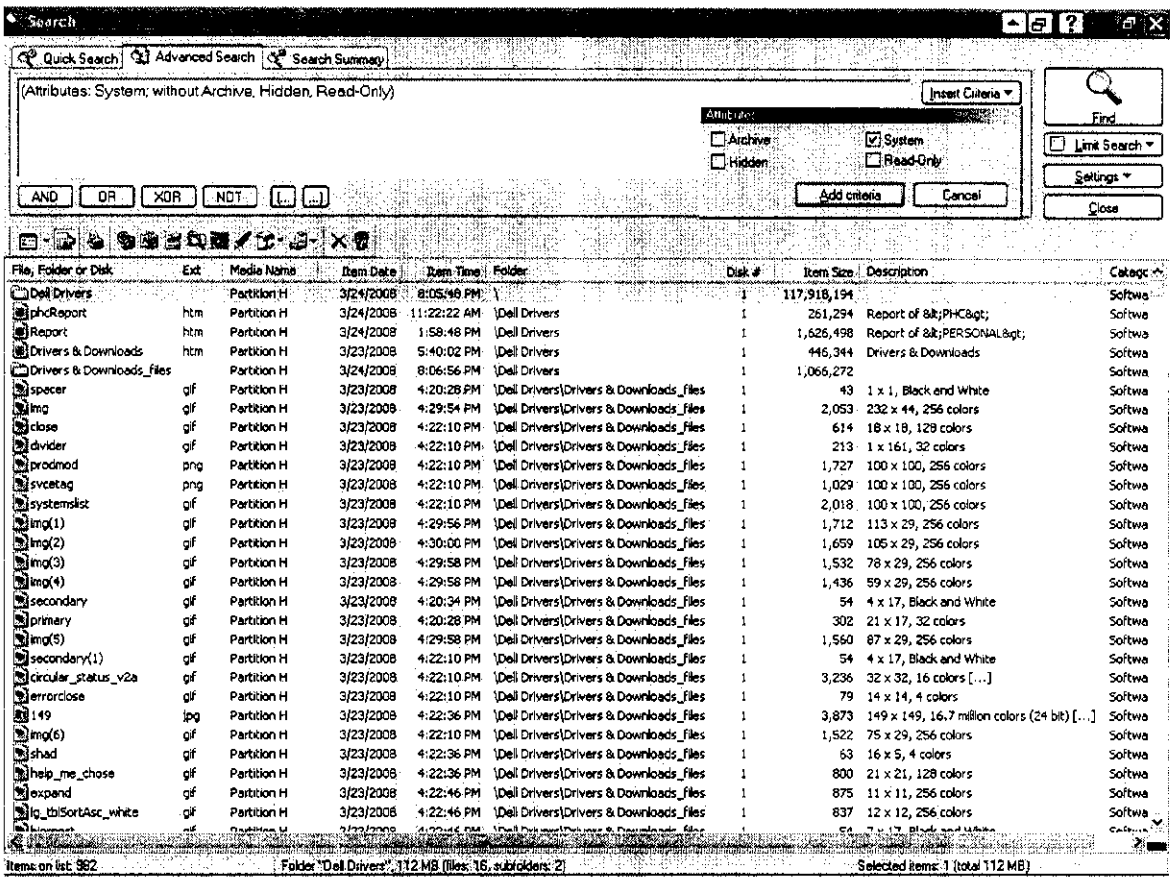

Figure 7.2.15 SearchbyAttributes

Search by Catagory:

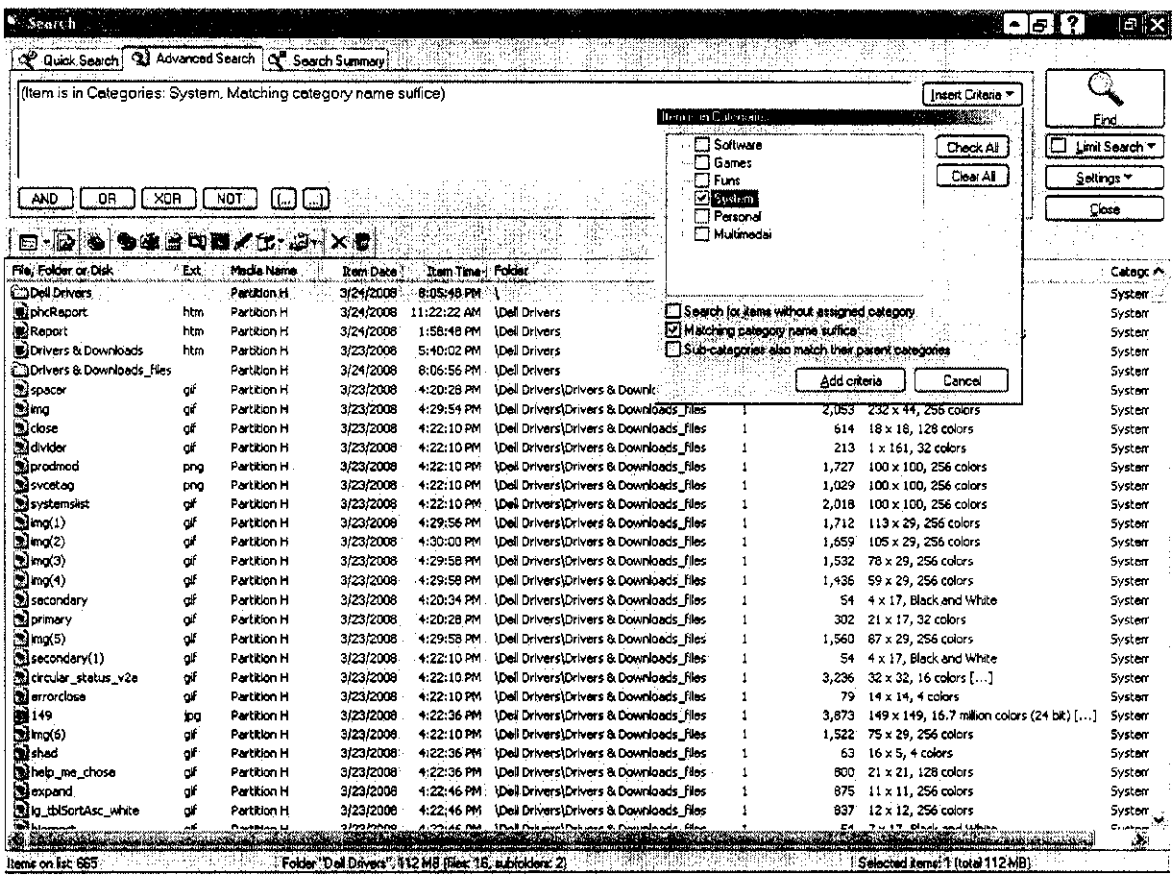

Figure 7.2.16 SearchbyCatagory

Search by Date:

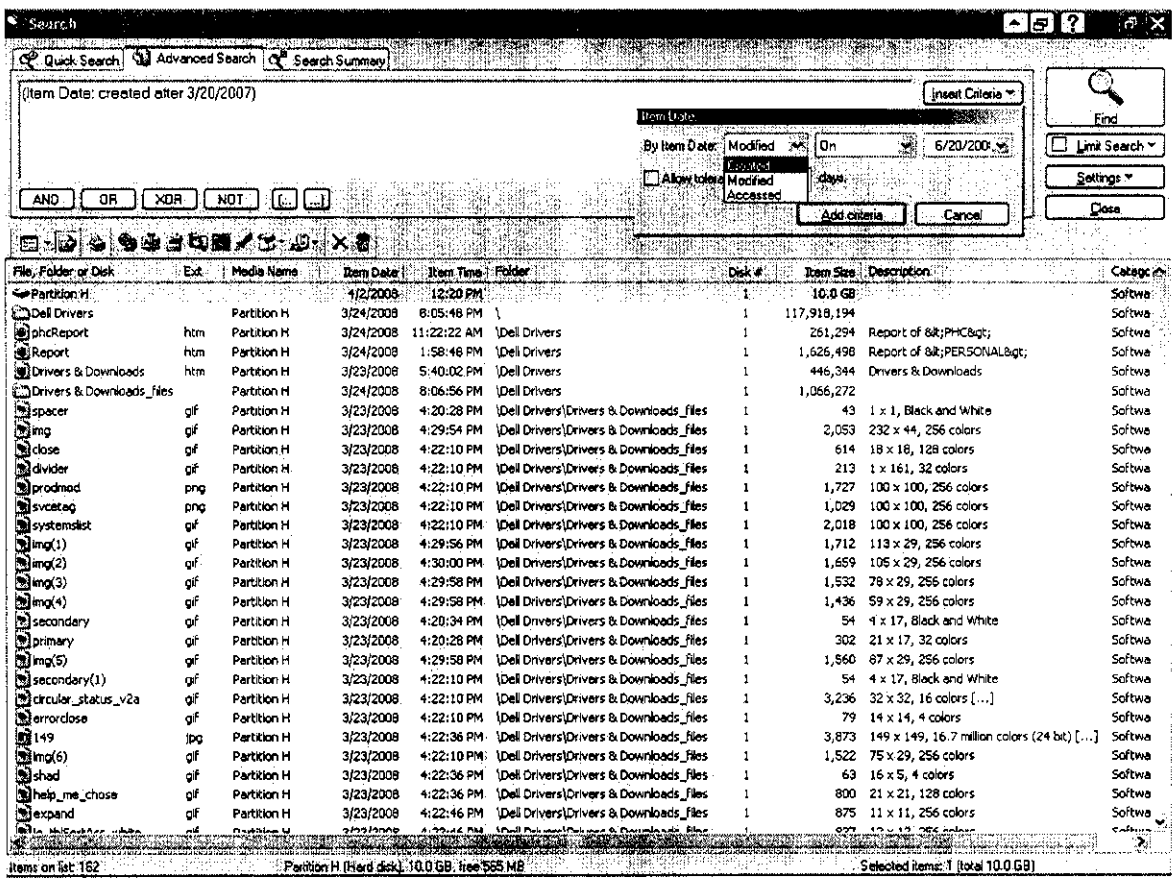

Figure 7.2.17 SearchbyDate

Search by Description:

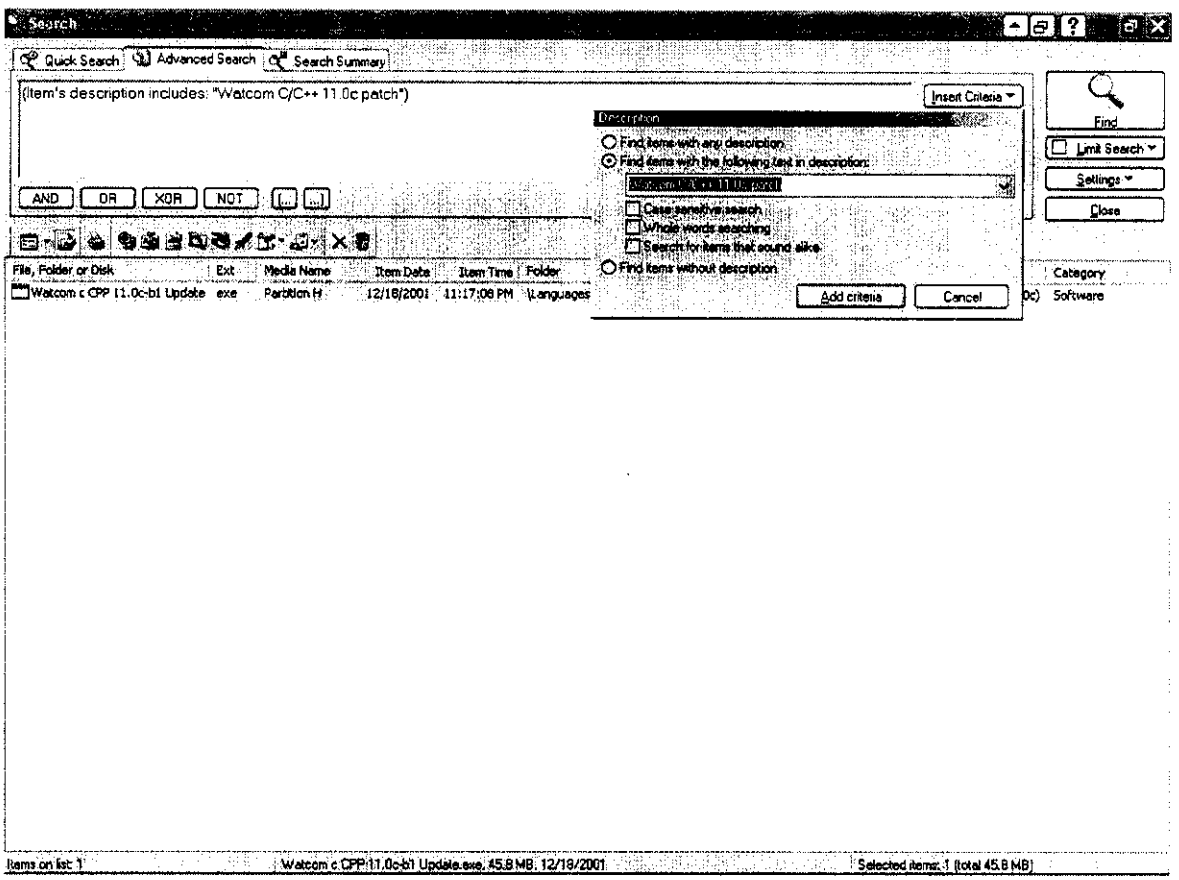

Figure 7.2.18 SearchbyDescription

Search by Location:

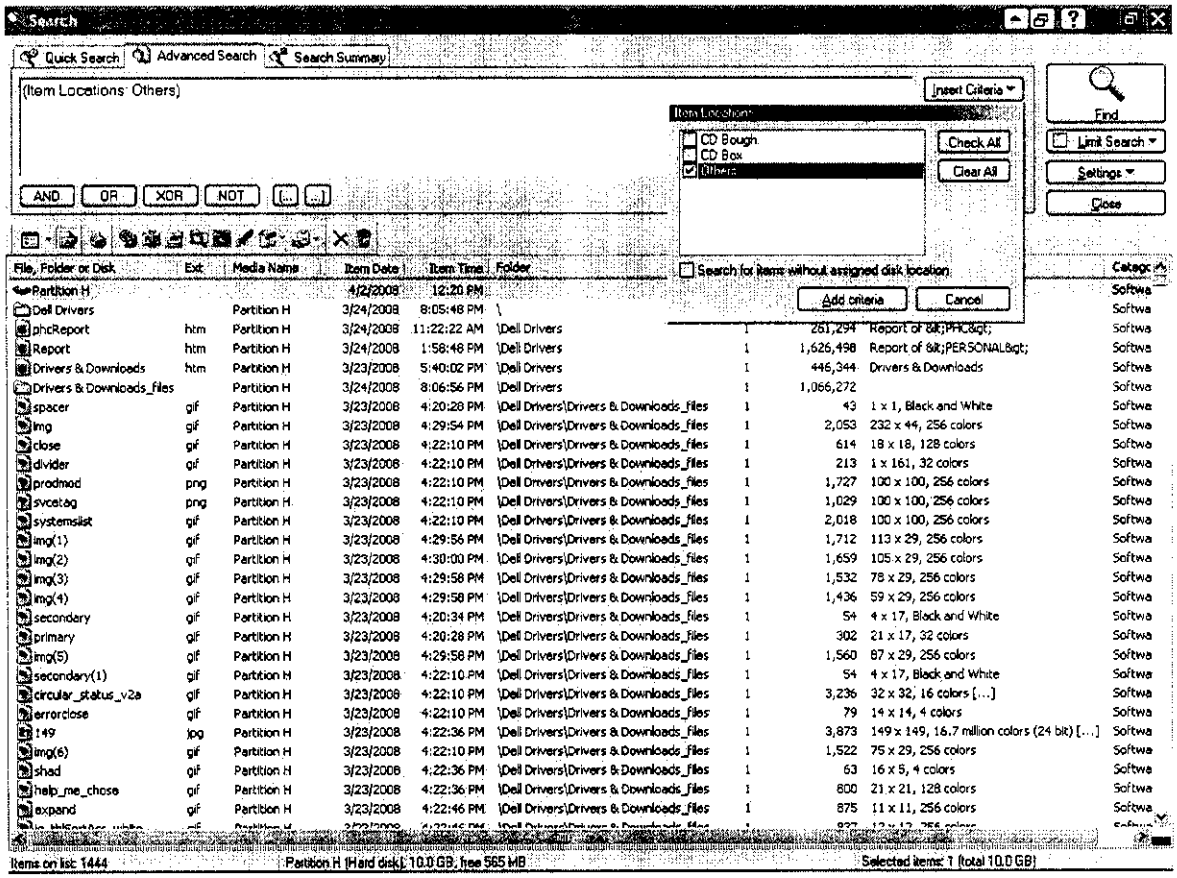

Figure 7.2.19 SearchbyLocation

Search by Item Path:

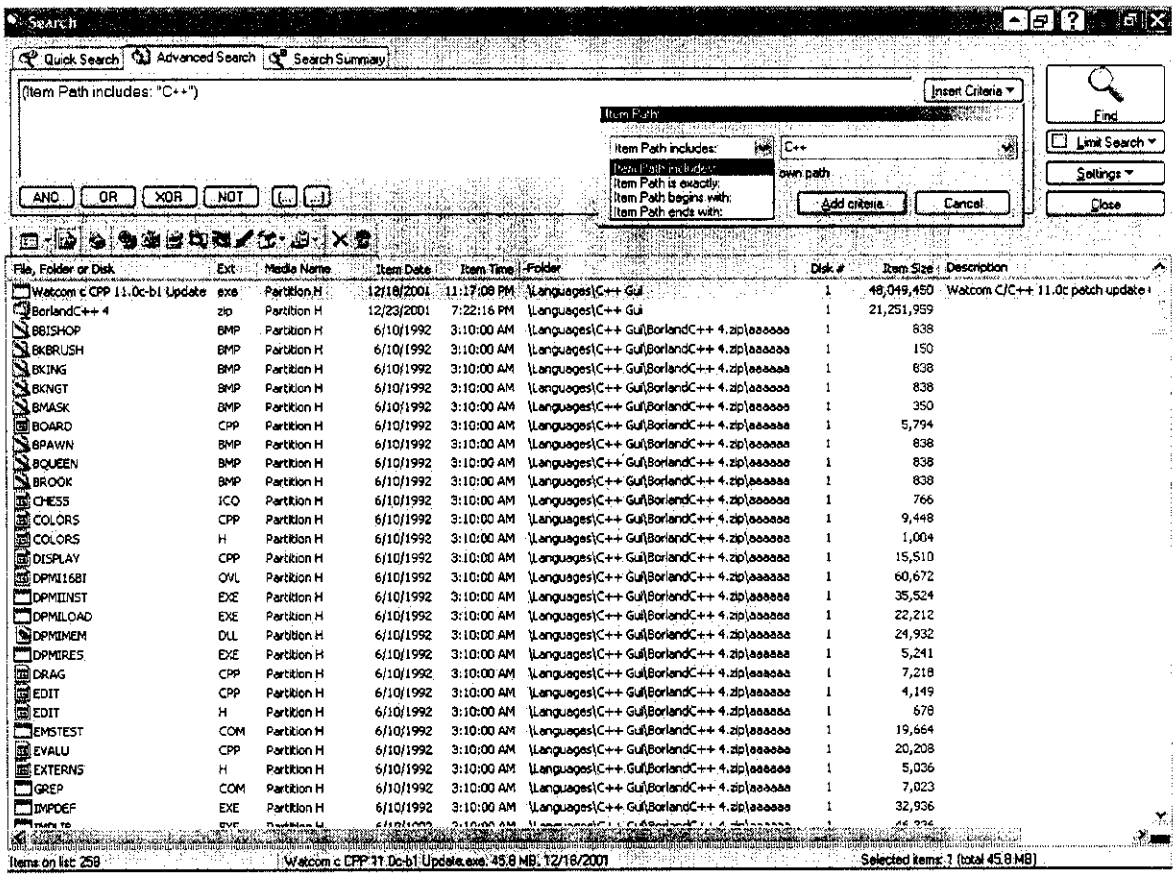

Figure 7.2.20 SearchbyItemPath

Search by Item Size:

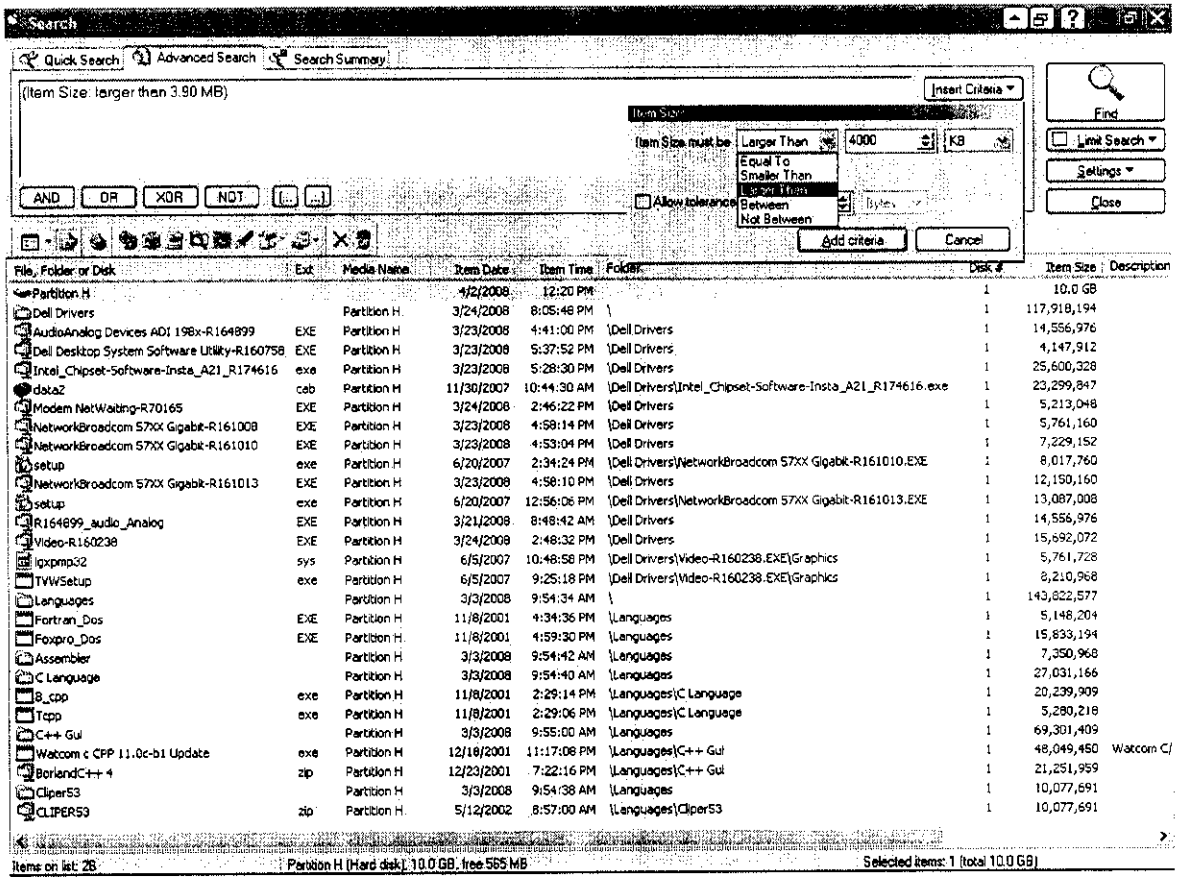

Figure 7.2.21 SearchbyItemSize

Search by Item Time:

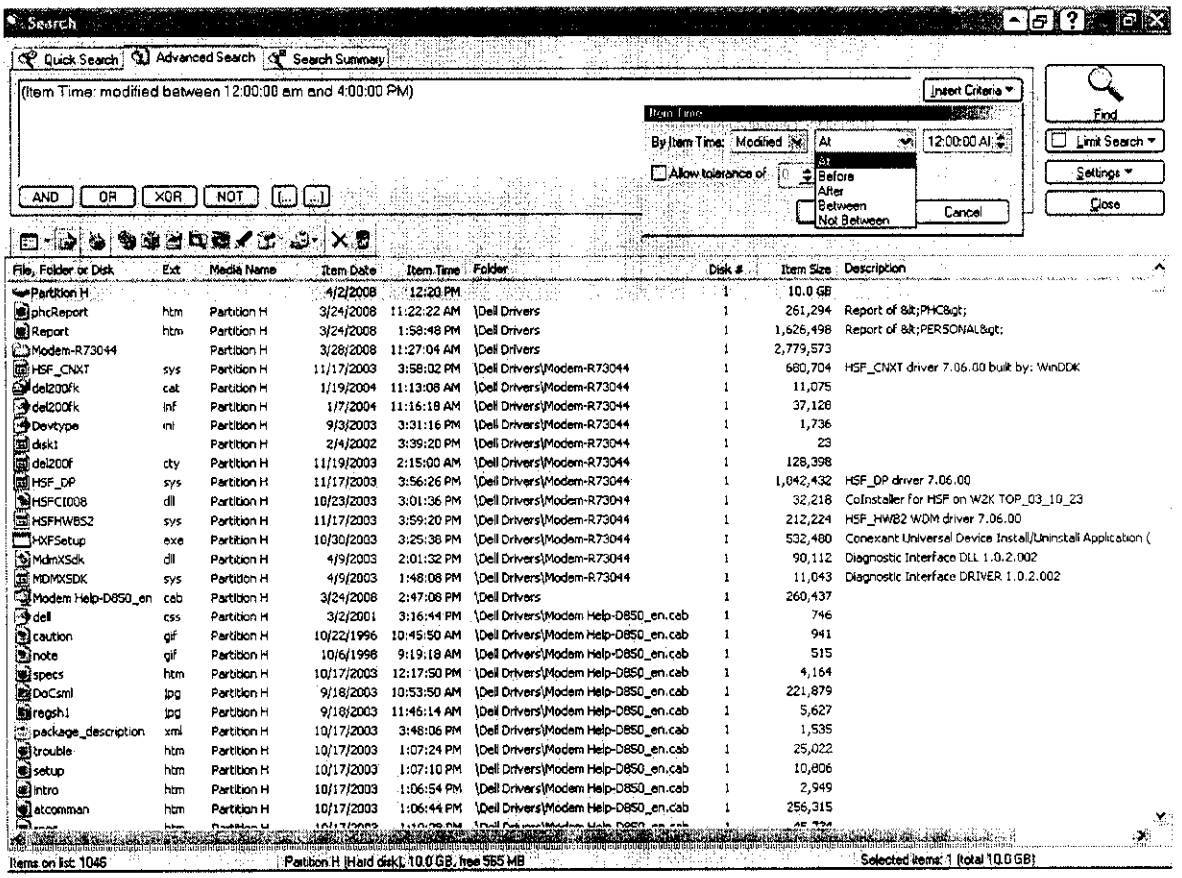

Figure 7.2.22 SearchbyItemTime

Quick Search:

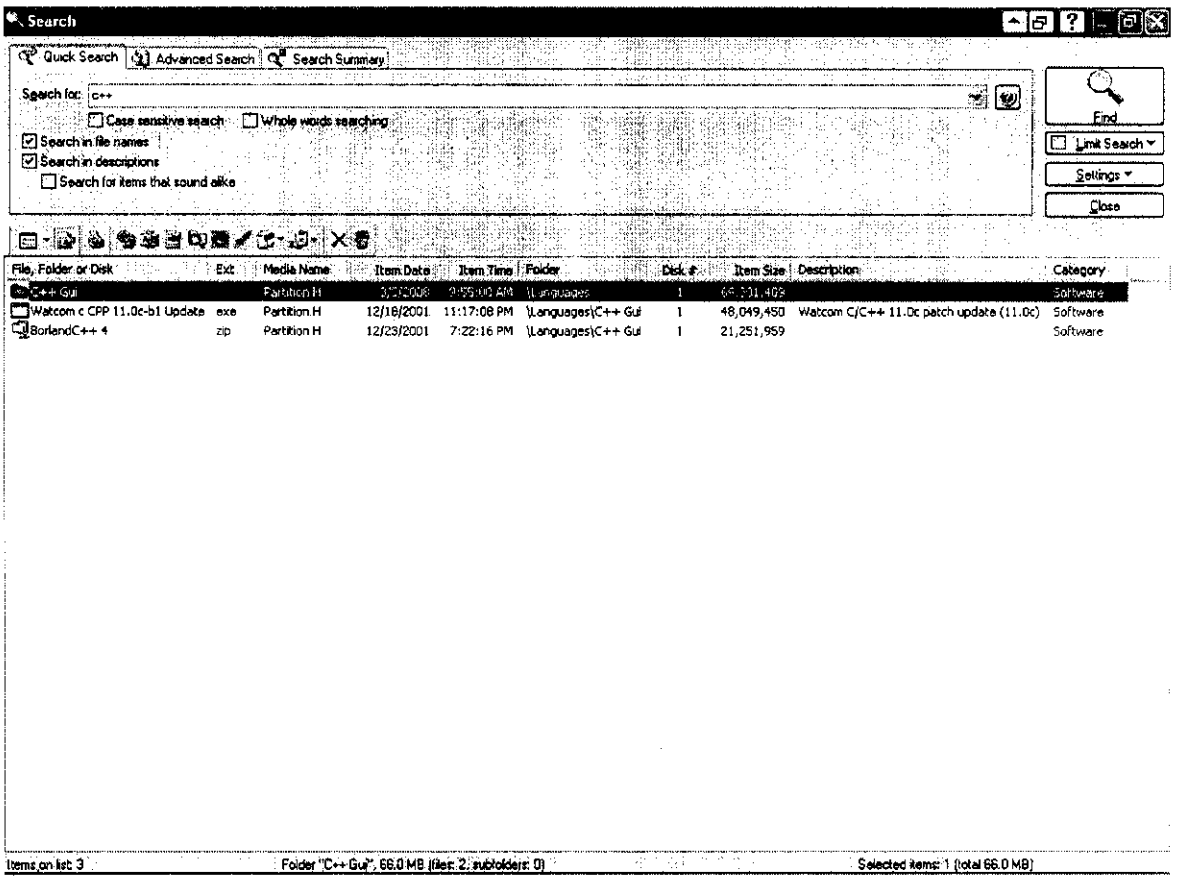

Figure 7.2.23 QuickSearch

Search Results:

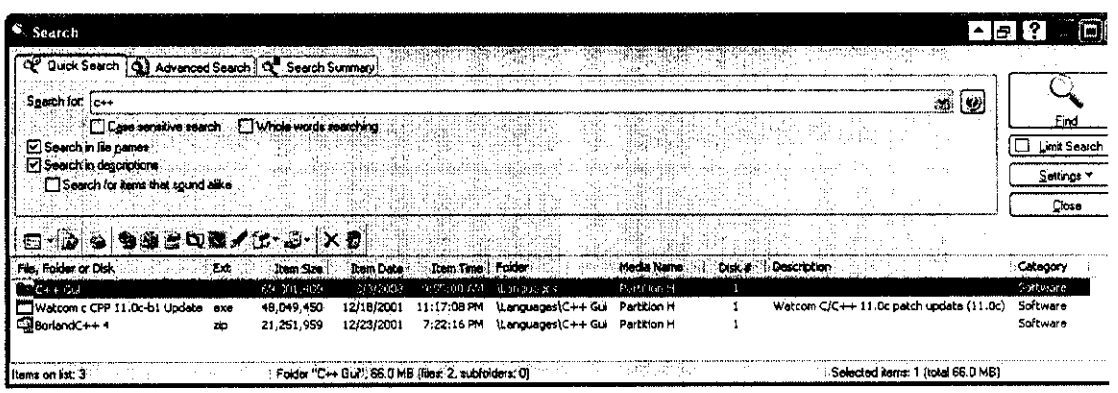

Figure 7.2.24 SearchResults

7.3 RECOVERY:-

File Menu:

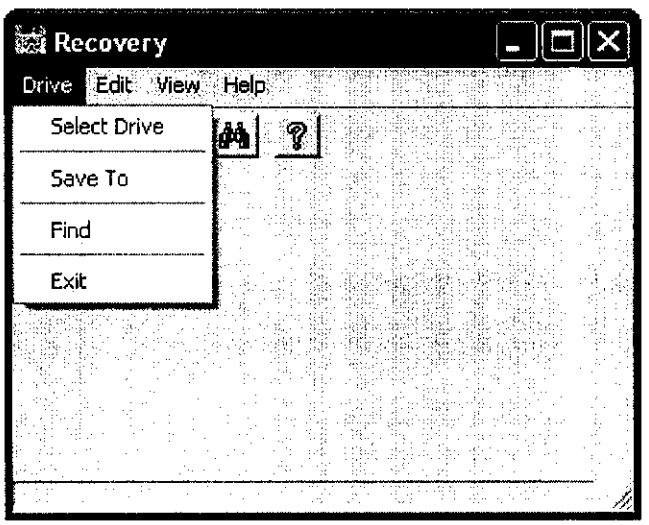

Figure 7.3.1 FileMenu

Edit Menu:

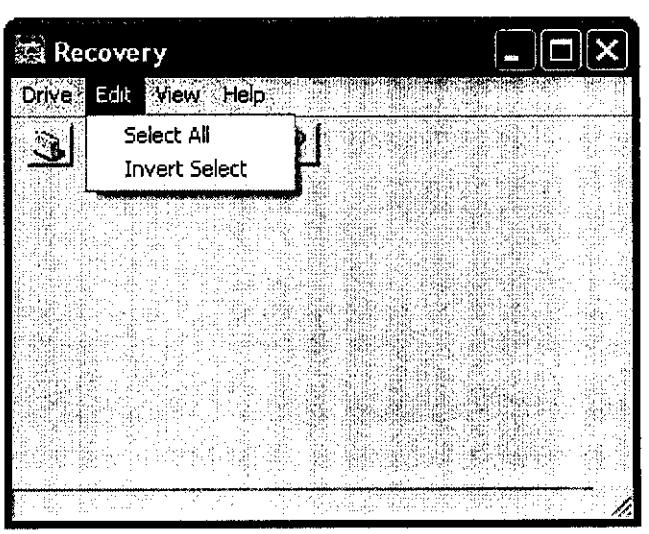

Figure 7.3.2 EditMenu

View Menu:

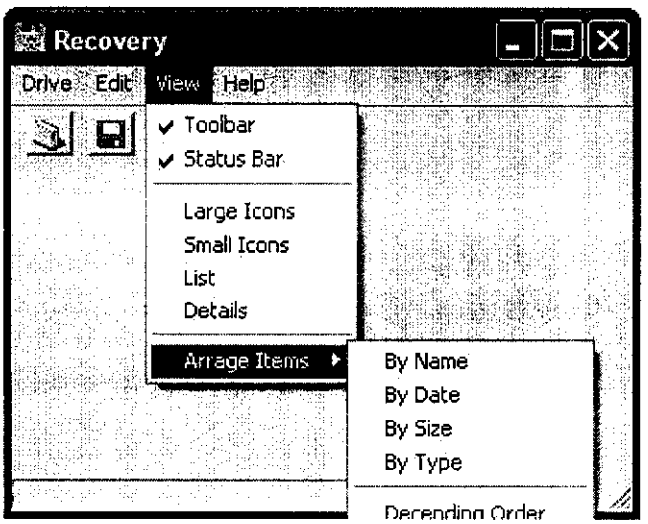

Figure 7.3.3 ViewMenu

Select Drive:

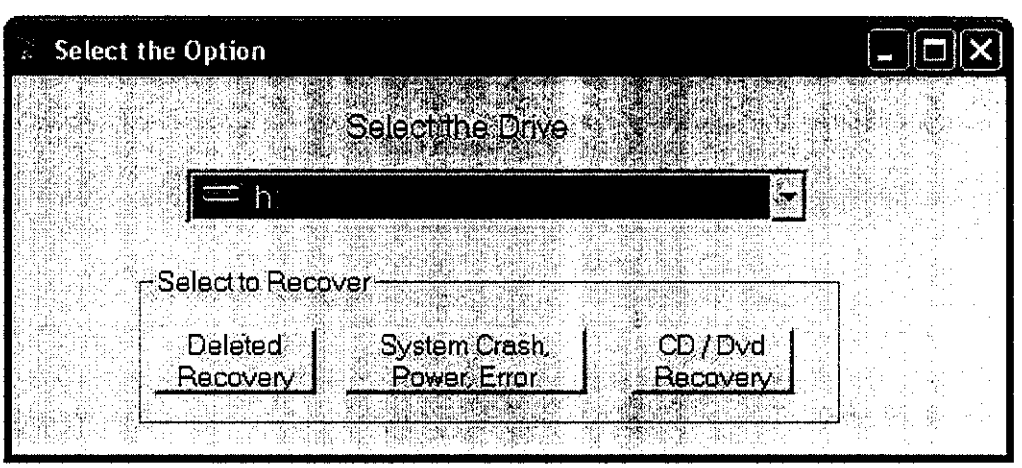

Figure 7.3.4 SelectDrive

Before Recovery:

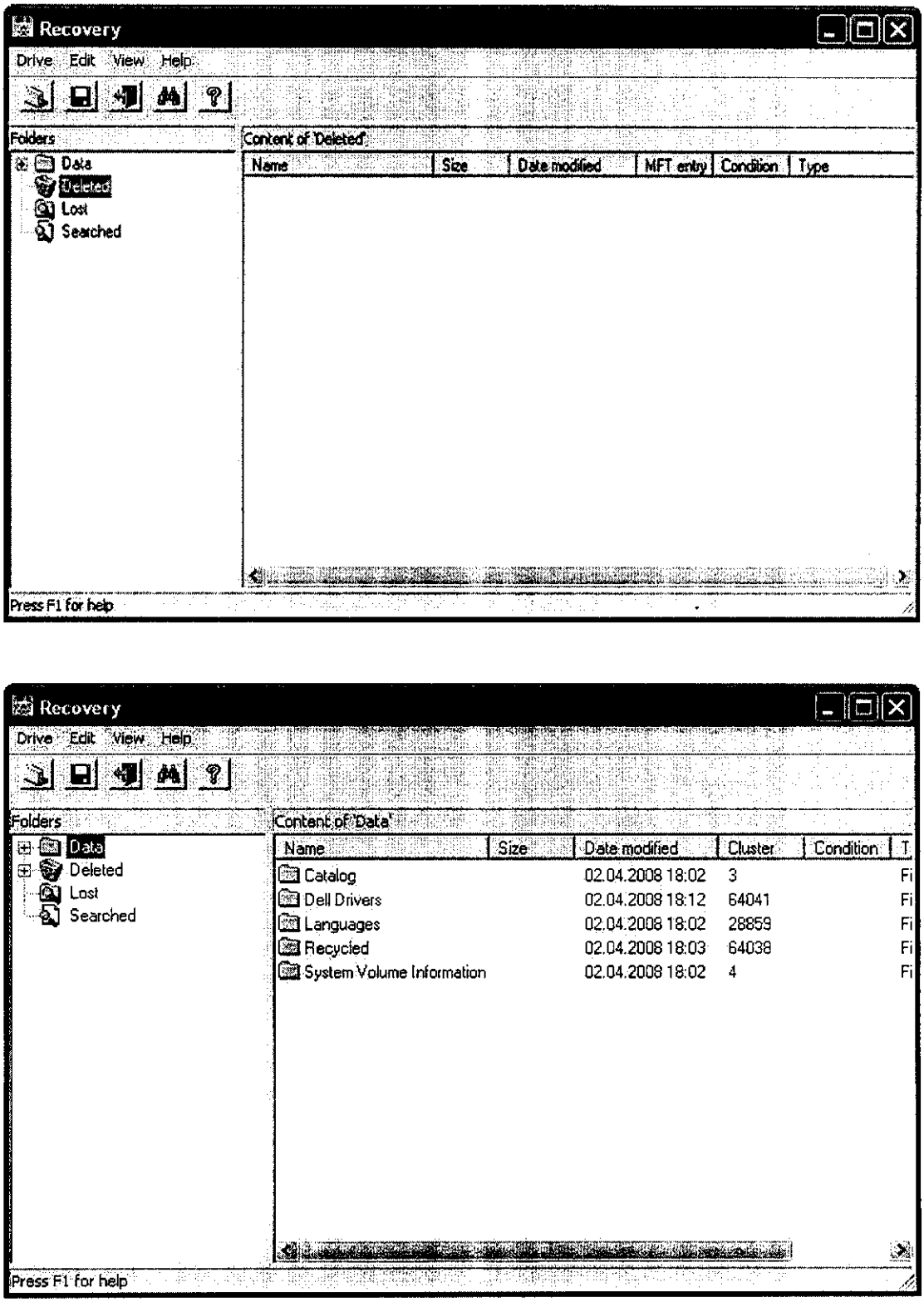

Figure 7.3.5 BeforeRecovery

After Recovery:

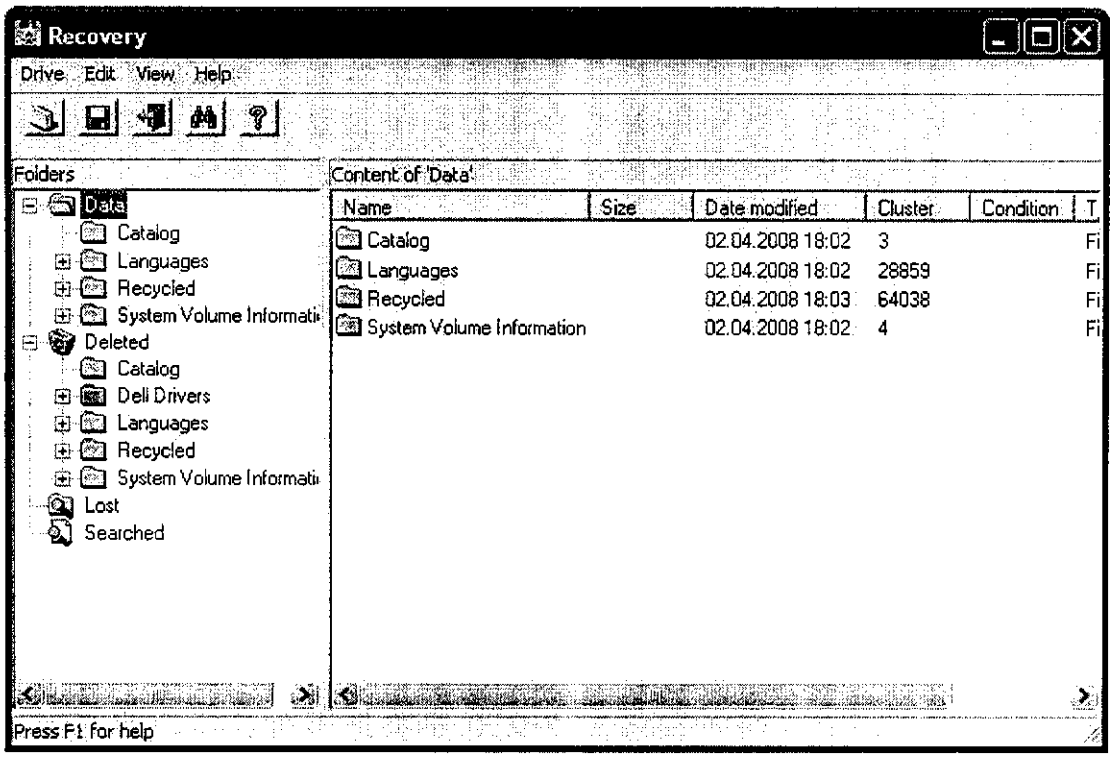

Figure 7.3.6 AfterRecovery

Save Recovered Data:

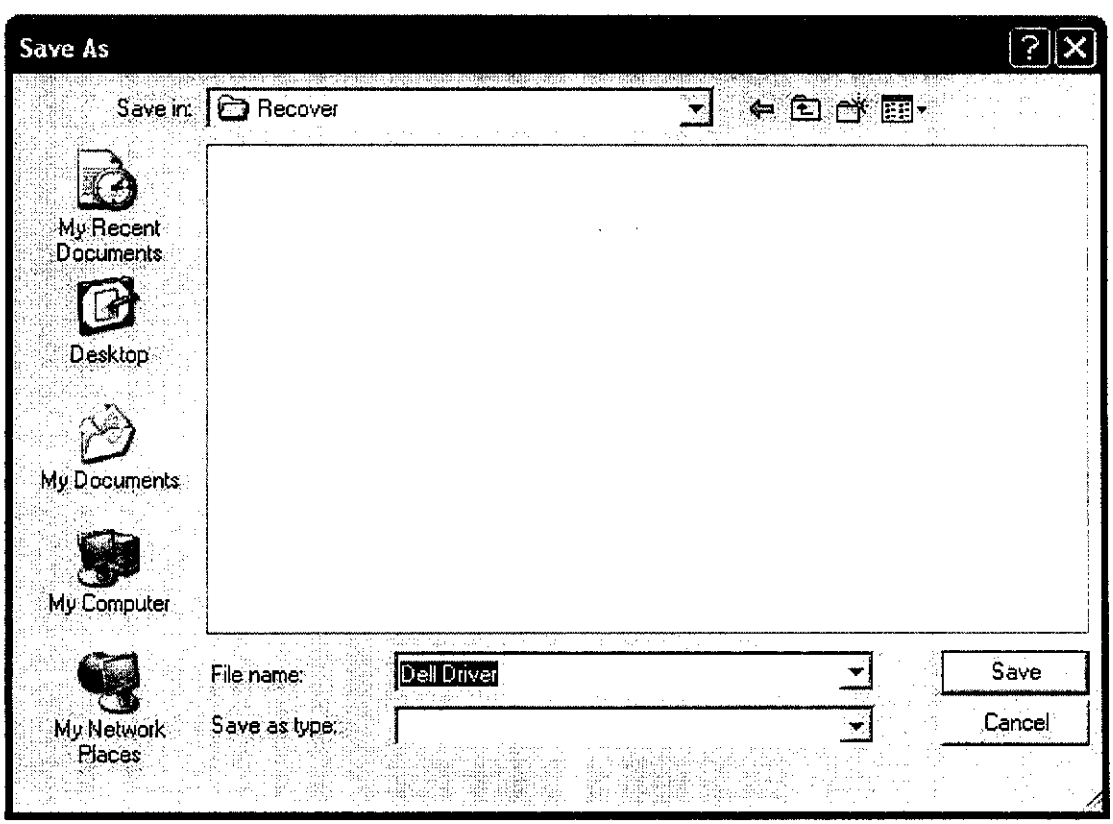

Figure 7.3.7 SaveRecoverdData

Report:

File Recovered Report

FileName	Path	Recover
Modem Help-D850_en.cab	H:\Dell Drivers	Yes
AudioAnalog Devices ADI 198x-R164899.EXE	H:\Dell Drivers	Yes
Dell Desktop System Software	H:\Dell Drivers	Yes
DiagnosticsDell 32 Bit Diagnostics-CW1322A1.exe	H:\Dell Drivers	Yes
Intel_Chipset-Software-Insta_A21_R174616.exe	H:\Dell Drivers	Yes
Modem NetWaiting-R70165.EXE	H:\Dell Drivers	Yes
Modem-R73044.EXE	H:\Dell Drivers	Yes
NetworkBroadcom 57XX Gigabit-R161008.EXE	H:\Dell Drivers	Yes
NetworkBroadcom 57XX Gigabit-R161010.EXE	H:\Dell Drivers	Yes
NetworkBroadcom 57XX Gigabit-R161013.EXE	H:\Dell Drivers	Yes
R164899_audio_Analog.EXE	H:\Dell Drivers	Yes
R73044.EXE	H:\Dell Drivers	Yes
Video-R160238.EXE	H:\Dell Drivers	Yes

Figure 7.3.8 FileRecoveredReport

REFERENCES

The following are the books referred to develop this project work are listed below:

- ✓ MSDN Library Visual Studio 2005 Release.
- ✓ Jeff Prosise, "Programming Microsoft .NET", Microsoft Press
- ✓ Ed Robinson, Michael Bond, Ian Oliver, Michael Bond, Ian Oliver Ed Robinson, "Upgrading Microsoft Visual Basic 6.0 to Microsoft Visual Basic .NET", Microsoft Press
- ✓ John Connell, "Coding Techniques for Microsoft(r) Visual Basic(r) .NET", Microsoft Press
- ✓ Visual Basic .NET Black Book
- ✓ Addison-Wesley, "A Programmers Guide to .NET"
- ✓ VB.Net Complete Reference (2005), McGraw Hill
- ✓ Wrox , "Visual Basic 2005 Programmer's Reference"

The following are the Website references to develop this project work are listed below:

- ✓ www.microsoft.com
- ✓ www.wikipedia.com
- ✓ www.wikibooks.com
- ✓ www.petri.co.il/kb.htm