Abstract

In the information age, data security has become a prominent problem and requires a high level security. There is hardly any tool which can provides drive level data security with encryption and locking altogether. Our software contains all the tools to cover up the above mentioned problem. **Secure Data Storage** is built on .NET Framework using C#. It provides data integrity, confidentiality of user's data with its extensive features. It ensures above mentioned security credentials with following services:

- Creating new volume
- Encrypting and locking the data of that drive.

ACKNOWLEDGEMENT

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CHAPTER 1

1.1 INTRODUCTION

Secure Data Storage is a tool that provides user a facility to create a new drive and to secure data within it. Along with it you can also lock any directory with a password which can further be secured by encryption utility.

It basically consists of two modules:

(i) Volume creation

(ii) Security

The modules will be discussed broadly in following Chapters.

1.2 OBJECTIVE

To develop an application to which can guarantee the confidentiality and integrity of user's data.

To develop a free and open source application on data security.

1.3 SCOPE

This application can be used for both home and office users to secure their confidential data .this application has a huge scope in future as today paper work has been replaced by electronic data . Therefore this application will be proven very useful in this scenario.

CHAPTER 2

Project Management

2.1 Project Development Approach

To solve actual problems in an industry, software developer or a team of developers must incorporate a development strategy that encompasses the process, methods and tools layers and generic phases. This strategy is often referred to as process model or a software developing paradigm. A process model for software developing is chosen based on the nature of project and application, the methods and tools to be used, and the controls and deliverables that are required. All software development can be characterized as a problem solving loop in which four distinct stages are encountered: Status quo, Problem definition, technical development and solution integration. Regardless of the process model that is chosen for a software project all of the stages coexist simultaneously at some level of detail.

- **Our Project Follows the Waterfall Model**

THE WATERFALL MODEL

The steps of the typical Waterfall Model are:

1. Requirement Analysis

2. System & Software Design

3.Implementation

4.Integration & System Testing

5.Operation and Maintenance

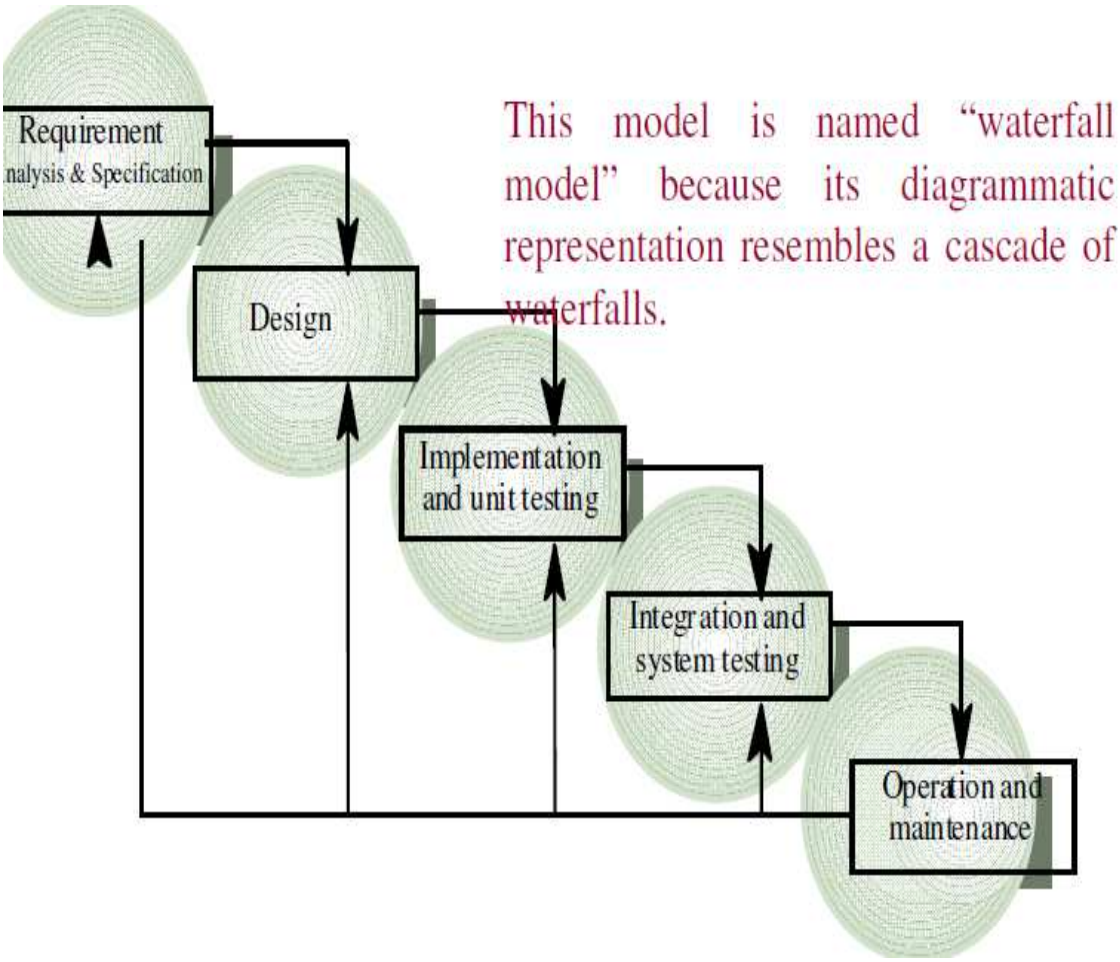

Fig 2.1

Problems of waterfall model :

i. It is difficult to define all requirements at the beginning of a project

ii. This model is not suitable for accommodating any change

iii. A working version of the system is not seen until late in the project's life

iv. It does not scale up well to large projects.

2.2 Project Plan

Requirement Analysis

This phase is completed from 1-Aug to 3 Sep.

Design Phase

This phase is completed from 3 sep to 26 sep.

Implementation Phase

This phase is completed from 4 oct. to jan 2012.

Testing Phase

This phase is completed in February and mid of march.

Implementation Phase

Complete project is implemented successfully on our systems by 25 May 2012.

CHAPTER 3

SYSTEM REQUIREMENT STUDY

1. **Hardware /Software Requirements**

   Hardware

   Dual core

   1 GB RAM

   160 GB Hard Disk

2. **Software**

   Microsoft **V**isual Studio 2008

   Windows 7 Operating System

3. **Documentation and presentation Tools**

   Microsoft Office Word 2007

   Microsoft Office Power Point 2007

4. **Software Tools required**

Microsoft Visual Studio 2008 is an integrated development environment (IDE) from Microsoft. It is used to develop console and graphical user interface applications along with Windows Forms applications, web sites, web applications, and web services in both native code together with managed code for all platforms supported

by Microsoft Windows, Windows Mobile, Windows CE, .NET Framework, .NET Compact Framework and Microsoft Silverlight

Visual Studio includes a code editor supporting IntelliSense as well as code refactoring.

Visual Studio supports different programming languages by means of language services, which allow the code editor and debugger to support (to varying degrees) nearly any programming language, provided a language-specific service exists. Built-in languages include C/C++ (via Visual C++), VB.NET (via Visual Basic .NET, C# . Support for other languages such as M, Python, and Ruby among others is available via language services .It also supports XML/XSLT, HTML/XHTML, JavaScript and CSS. Individual language-specific versions of Visual Studio also exist which provide more limited language services to the user: Microsoft Visual Basic, Visual J#, Visual C#, and Visual C++.

ASP.NET 3.5 is a Web application framework developed and marketed by Microsoft to allow programmers to build dynamic Web sites,Web applications and Web services. It was first released in January 2002 with version 1.0 of the .NET Framework, and is the successor to Microsoft's Active Server Pages (ASP) technology. ASP.NET is built on the Common Language Runtime (CLR), allowing programmers to write ASP.NET code using any supported .NET language. The ASP.NET SOAP extension framework allows ASP.NET components to process SOAP messages.

CHAPTER 4

PROJECT DESCRIPTION

4.1 MODULES

The project has been divided into two modules:

1) Volume Control
2) Security

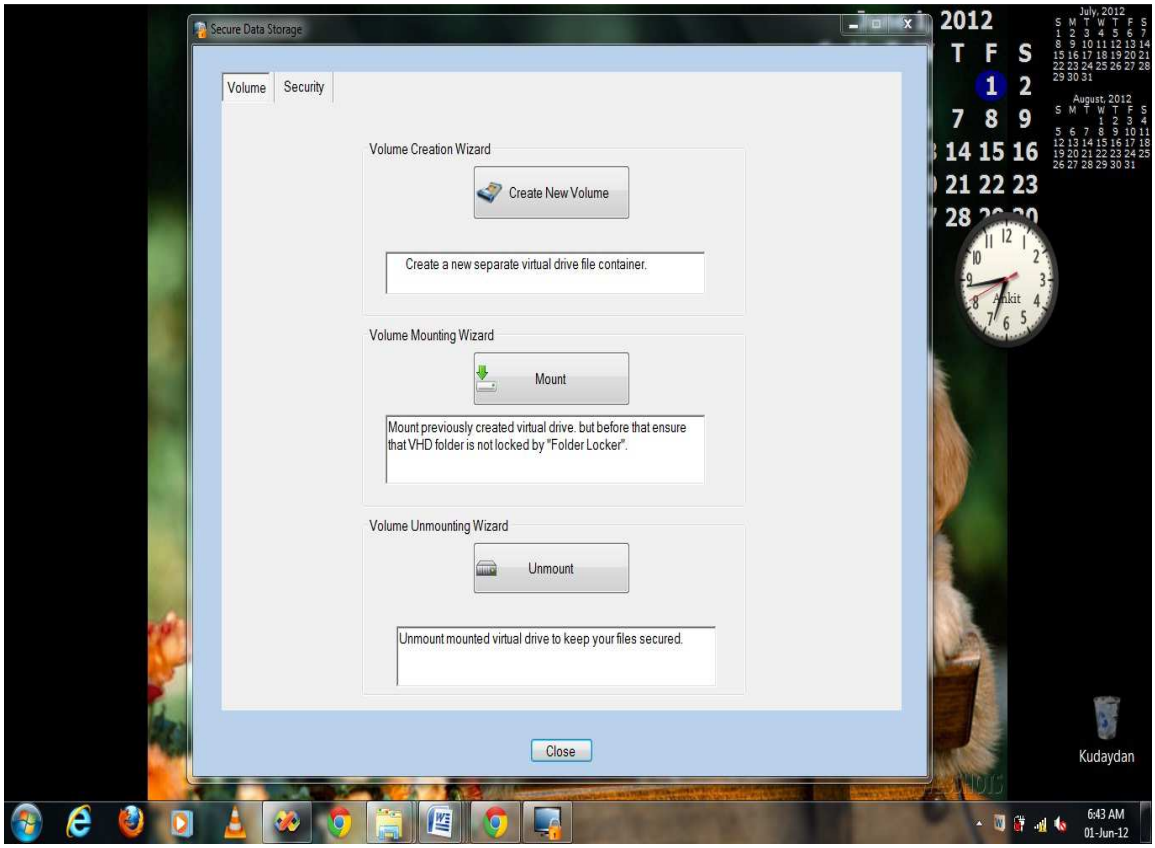

Fig 4.1

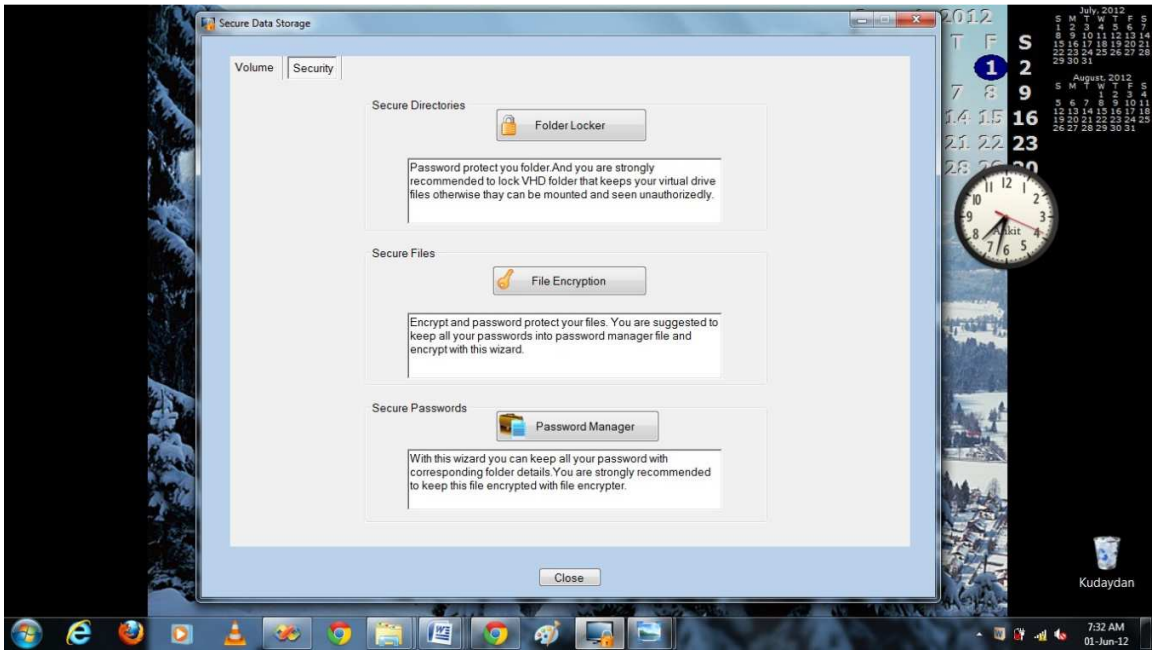

Fig 4.2

4.2 MODULE DESCRIPTION

1) Volume Control:

   This module itself has been divided into three sub-modules.

   i. Create New Volume

   ii. Mounting

   iii. Dismounting

2) Security

   This module itself has been divided into three sub-modules.

   i. Directory Locker

   ii. File Encrypter

   iii. Password Manager

4.2.1 Volume Control

i. Create New Volume:

This wizard let the user create a new volume or file container or virtual drive.

To create new volume, user has to click on “Create New Volume” button and this button click event will call a batch file program as shown in figure.

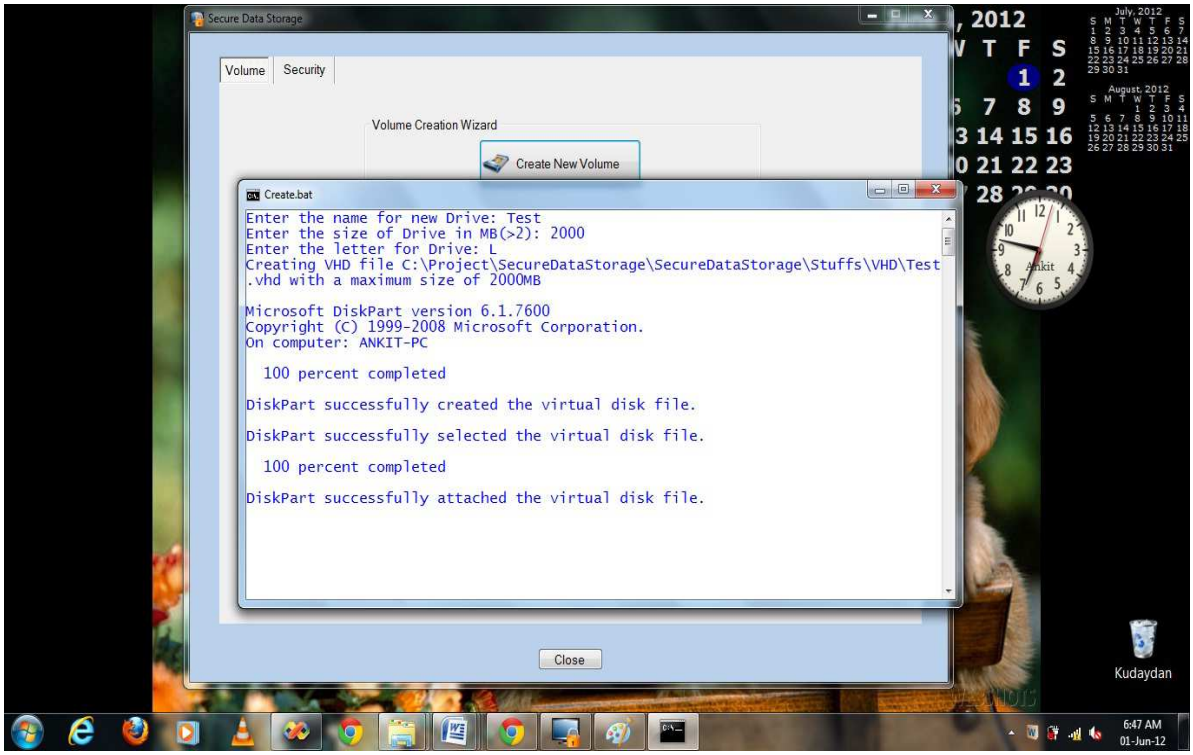

Fig 4.3

In this figure, batch file is asking for Drive name, Size(in MB), Drive Letter to create new volume.

ii. Mounting

This wizard let the user mount a previously created volume. For this user has to provide the name of the drive that is stored in VHD Folder inside stuffs directory. The snapshot is following.

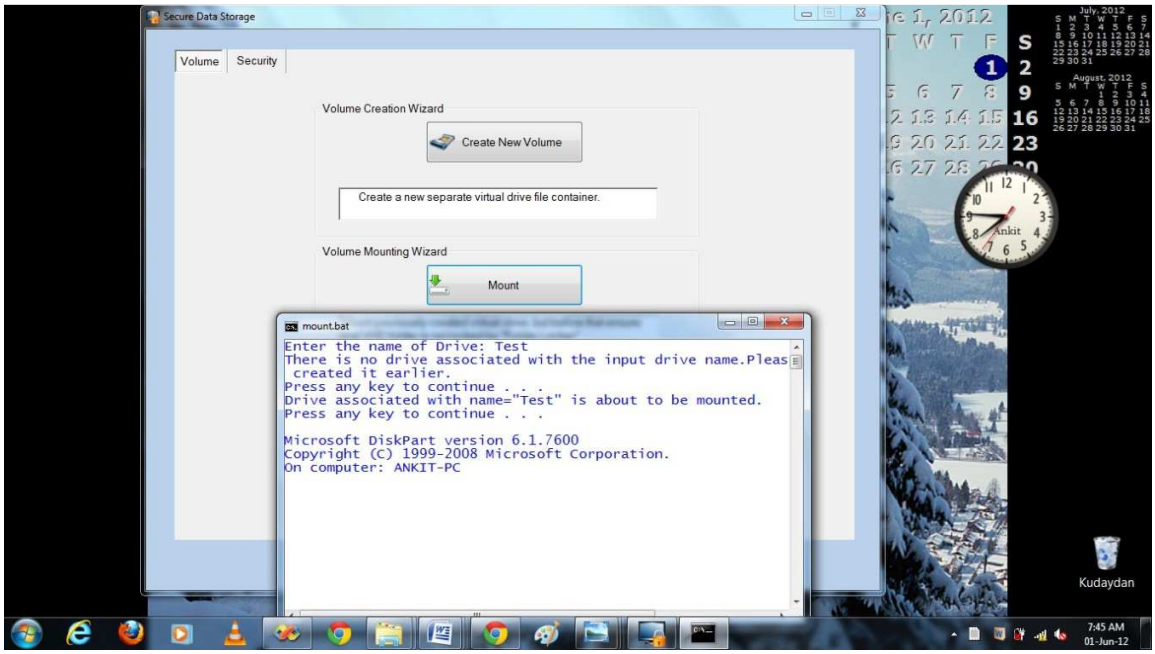

Fig 4.4

In this snapshot, batch file is called when user clicks on “Mount” button.

And in turn, batch file asks for the drive name which is to be miunted.

iii. Dismounting

This wizard let the user dismount a mounted drive. Users are strongly recommended that they should dismount their drives when they do not require drive anymore.

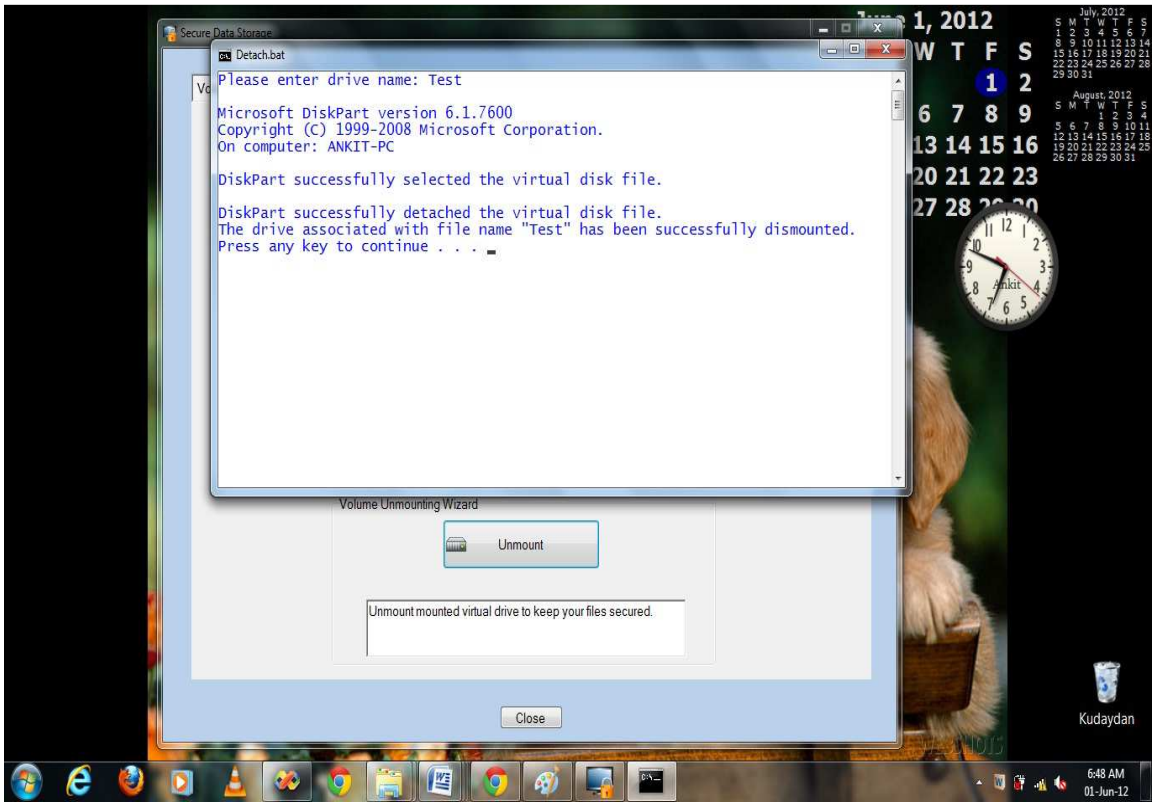

Fig 4.5

Dismounting makes the user's drive inaccessible to any unauthorized person. And they are also strongly recommended that they should lock the VHD directory with "Folder Locker" that contains the virtual drive file.

4.2.2 Security

i. Folder Locker :

Using this tool, user can lock and unlock directories with passwords. And they are strongly recommended that they should keep VHD Folder locked with it. So that no one can access and mount their drives unauthorizedly.

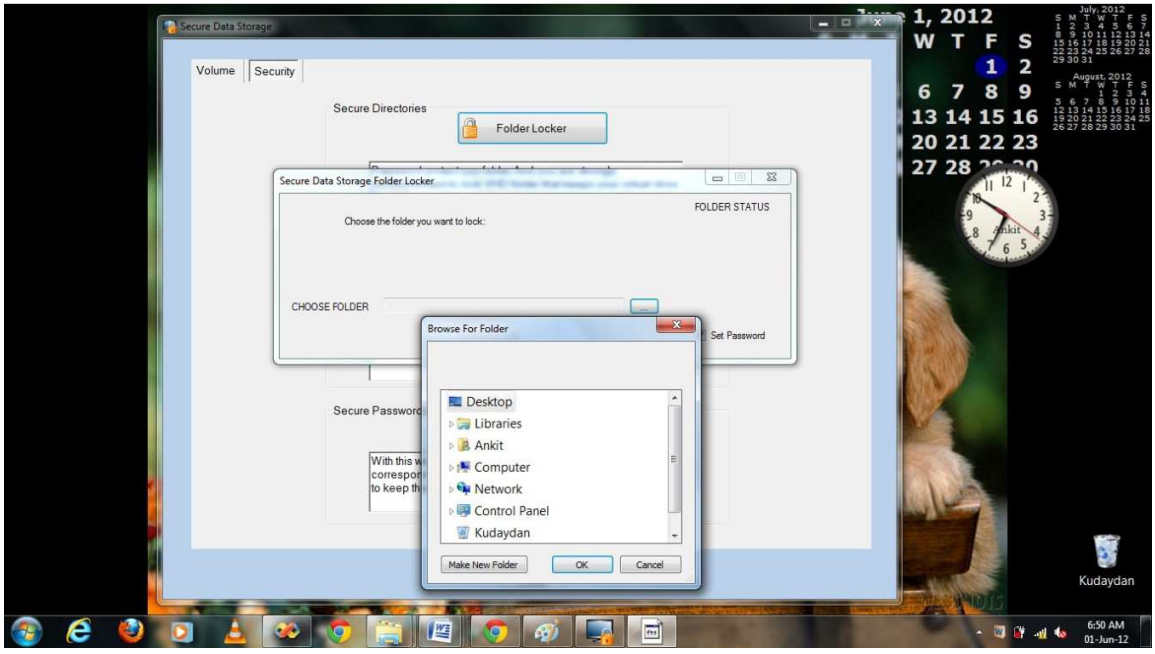

Fig 4.6

In this figure, user clicks on “Folder Locker” and provide the path for the folder that is to be locked.

ii. File Encrypter:

This tool can encrypt the files. This utility can be used for following two purposes:

a. Highly confidential file can be encrypted.
b. The file generated by Password manager , that contains password, can be encrypted so that no one can access the password file.

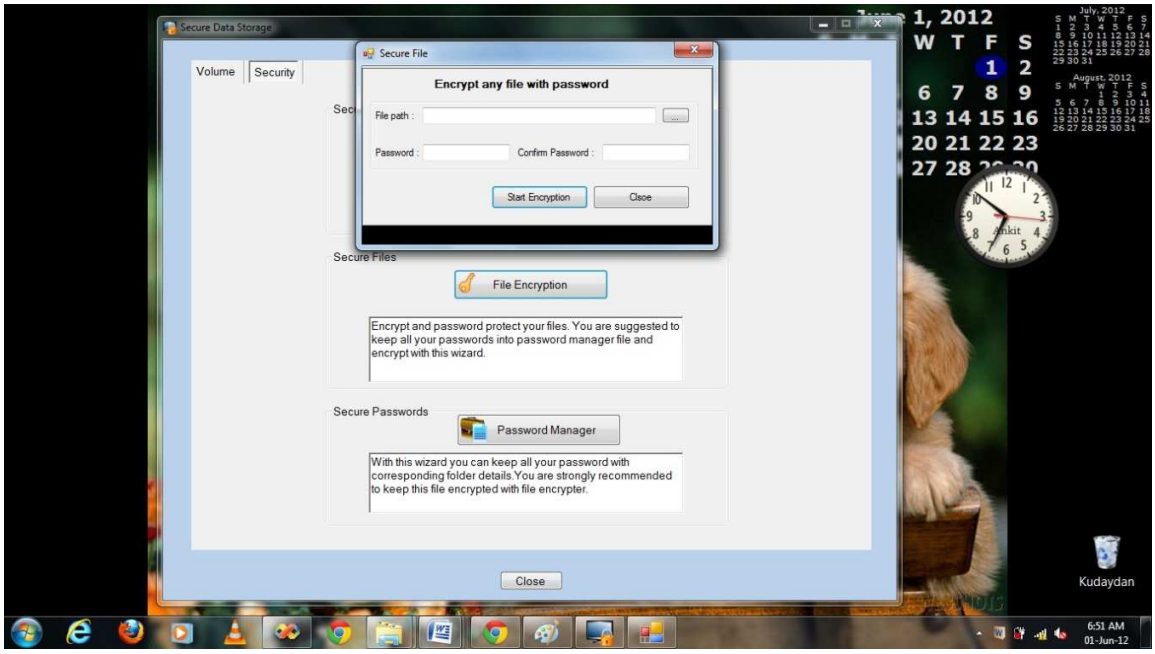

Fig 4.7

Users are recommended that they should not leave their Password Manager file unencrypted otherwise anyone can access the file and see passwords.

iii. Password Manager

We recommend that user should keep different password for each folder and file. So that full security can be guaranteed. It is acceptable that user can not remember the entire passwords.

To overcome this problem, we created a Password Manager utility that will contain the password for corresponding folders.

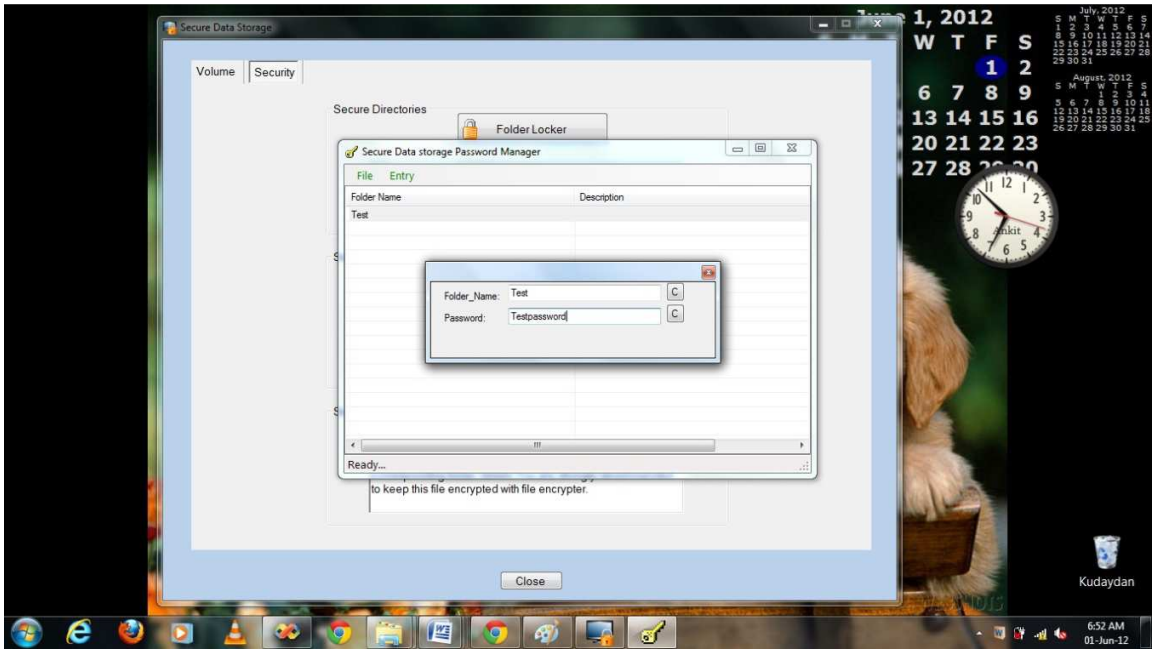

Fig 4.8

The password can be easily retrieved by double clicking on the corresponding folder name in password manager.

CHAPTER 5

Constraints

5.1 Security requirements

Security

The Information should be Secure; there should not be any kind of malfunctioning. All the results, details of Exams taken and Questions are stored securely in the system. System Information will not be changed by any person rather than the management.

Reliability

Reliability refers to the trust of user in case of adverse load conditions. Reliability also includes all the three credentials of security ie, Confidentiality, Availability and Integrity.
The application should function according to the expectations of the users even in worst scenario.

User Friendliness

System should be user friendly, so that any user can access the system. It should be easy and intractable to the user so that a new and inexperienced user can easily operate it.

Robustness

This quality of the application refers to withstanding of application inspite of adverse situations.

Quality

In the context of software engineering, software quality refers to two related but distinct notions that exist wherever quality is defined in a business context:

- Software functional quality reflects how well it complies with or conforms to a given design, based on functional requirements or specifications. That attribute can also be described as the fitness for purpose of a piece of software or how it compares to competitors in the marketplace as a worthwhile product.
- Software structural quality refers to how it meets non-functional requirements that support the delivery of the functional requirements, such as robustness or maintainability, the degree to which the software was produced correctly.

CHAPTER 6

SYSTEM ANALYSIS

6.1 Feasibility Study

Does the New System Contribute to the Overall Objectives of the organization?

The new system would contribute to the overall objectives to of the organization. It would provide a quick, error free and cost effective solution to the current process. It would provide a solution to many issues in the current system. As the new system is flexible and scalable it can also be upgraded and extended to meet other complex requirements which may be raised in the future. However it is up to the organization to upgrade or extend it.

6.2 Testing

Our complete web application has undergone through various tests so that each and every corner of it can be checked.

For this we have prepared various test cases and each one is checked whether they are giving the right result or not.

Complete testing is devided into three parts.

1. **Unit testing**

In this part we examine each part individually for any error/exeption.

2. **Integration testing**

In this part we combine all the subparts that has already

Been tested now we combine them all and then we test.

3. **System testing**

In the final phase we check whether it is compatible with all the specified system requirement or not.

4. **Acceptance Testing**

This is the testing performed by the end user , to check whether the software is working up to his/her expectation or not.