



ACADEMIC TASK 3

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INT301: OPEN SOURCE TECHNOLOGIES

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QUESTION: Use any available open-source software to generate a report on recovery of deleted photos from your system and emails from your email account.

INTRODUCTION

Computer forensics is a branch of digital forensics that deals with the collection, preservation, analysis, and presentation of digital evidence in a manner that is admissible in a court of law. It involves using various tools and techniques to recover, analyse and interpret data that has been stored, processed or transmitted on electronic devices, such as computers, smartphones, and other digital storage media.

There are various types of Computer Forensics. Recovery of deleted photos from your system falls under Disk Forensics and recovery of emails falls under Email Forensic.

DISK FORENSIC

Disk forensics is a process of analyzing digital data stored on hard drives, USB drives, memory cards, and other types of storage media to investigate incidents of computer-related crimes or other suspicious activities. It involves the use of specialized tools and techniques to recover, preserve, and analyze data from a disk or other storage device.

Examples of activities that can be investigated using disk forensics include data theft, hacking, malware infections, unauthorized access to computer systems, and other cybercrimes. Disk forensics can be a time-consuming and complex process, but it can provide critical information to help solve crimes and prevent future incidents.

EMAIL FORENSIC

Email forensics is the process of examining email messages, headers, attachments, and other related information to uncover evidence related to a legal investigation or to determine the source of suspicious or illegal activity. It involves analyzing the content and metadata of emails to establish a timeline of events, identify the sender and receiver of the email, and uncover any attempts to alter or delete email messages.

Some common activities investigated through email forensics include email hacking, phishing attacks, cyberstalking, and identity theft. The results of email forensic investigations can be used to identify suspects, support legal claims, and prevent future incidents.

OBJECTIVE OF THE PROJECT

The objective of recovering deleted pictures from your system and emails from your email account is to retrieve important data that has been accidentally or intentionally deleted or lost. Both pictures and emails may contain critical information that is essential for business or personal use, such as financial data, contracts, communication with clients or colleagues, and more.

Recovering deleted pictures and emails may also be necessary for legal or compliance reasons. For example, if a legal case requires the production of specific images and emails, recovering deleted data can help ensure that all relevant information is included in the discovery process.

DESCRIPTION OF THE PROJECT

The process of recovering deleted pictures from your system and emails from your email account involves several steps:

1. Stop using the device or account where the data was deleted: To prevent new data from overwriting the deleted files, it is important to stop using the device or account as soon as possible after the deletion occurs.
2. Determine the location of the deleted data: For pictures, the deleted files may still be stored on the hard drive or other storage device, even if they are not visible in the file system. For emails, deleted messages may be stored in a trash or deleted items folder, or they may have been permanently deleted.
3. Use recovery software: There are a variety of software programs available that can scan the device or account for deleted files and attempt to recover them. These programs may use different techniques such as searching for file signatures or analyzing file structures to locate and restore deleted data.
4. Check backups: If you have backups of your data, you may be able to restore the deleted pictures or emails from the backup.
5. Seek professional assistance: If you are unable to recover the deleted data using software or backups, you may need to consult with a data recovery specialist who can use more advanced techniques to recover the data.

SCOPE OF THE PROJECT

The scope of recovery for deleted pictures and emails is limited to the data that was stored on the device or account at the time of deletion. If the data was not properly backed up, and new data has overwritten the deleted files, it may not be possible to recover all of the lost data. However, in many cases, it is possible to recover at least some of the deleted pictures and emails using recovery software or other techniques.

SYSTEM DESCRIPTION

TARGET SYSTEM DESCRIPTION

The target system for the recovery of deleted pictures from your system and emails from your email account will depend on the specific operating system and email provider you are using. However, in general, the following description outlines the common steps and requirements:

For the recovery of deleted pictures from your system, you will need to have a data recovery software installed on your computer. This software will allow you to scan your hard drive for deleted files and recover them if they are still present on the drive. Some popular data recovery software options include EaseUS Data Recovery, Recuva, and Disk Drill. Once you have installed the software, you will need to run a scan of your hard drive to locate the deleted pictures you want to recover.

When it comes to email account recovery, the process will depend on the email provider you use. In general, you will need to navigate to the account recovery page on your email provider's website and provide some form of identification to prove that you are the account owner. This could include providing your email address and password, answering security questions, or providing other identifying information. Once your identity has been verified, you will be able to reset your password and regain access to your email account.

It's important to note that the success of data recovery and email account recovery depends on various factors such as how long ago the data was deleted, the state of the hard drive or email account, and other technical considerations. In some cases, it may not be possible to recover deleted data or regain access to an email account.

ASSUMPTIONS AND DEPENDENCIES

The assumptions and dependencies of the recovery of deleted pictures from your system and emails from your email account are as follows:

1. The deleted pictures and emails have not been permanently overwritten: Data recovery software can only recover files that have not been permanently overwritten. If new data has been written over the space previously occupied by the deleted pictures or emails, it may not be possible to recover them.
2. The file system is intact: Data recovery software relies on the file system to locate and recover deleted files. If the file system has been corrupted or damaged, it may be difficult or impossible to recover the deleted pictures or emails.
3. The deleted pictures and emails were stored on a physical hard drive or storage device: Data recovery software is designed to recover data from physical hard drives or storage devices. If the pictures or emails were stored in a cloud-based service or online platform, the recovery process may be different or not possible.
4. The user has administrative privileges: To install data recovery software and perform a scan on the hard drive, the user will need to have administrative privileges on the

system. If the user does not have these privileges, they may not be able to perform the recovery process.

5. The email provider allows for account recovery: The ability to recover an email account depends on the policies and procedures of the email provider. If the provider does not allow for account recovery or if the user does not have the necessary information to verify their identity, it may not be possible to recover the email account.
6. The user has access to the necessary information to verify their identity: To recover an email account, the user may need to provide personal information or answers to security questions. If the user does not have access to this information, it may not be possible to recover the email account.

FUNCTIONAL/NON-FUNCTIONAL DEPENDENCIES

Functional dependencies of the recovery of deleted pictures from your system and emails from your email account include:

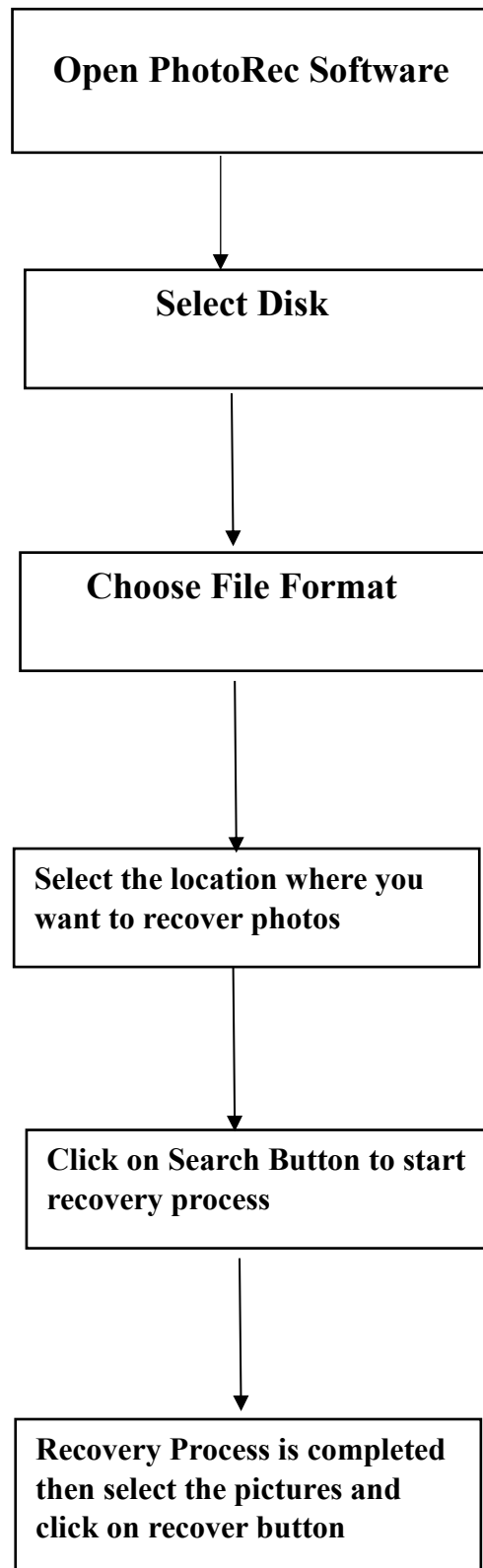
1. The data recovery software must be able to scan and identify deleted pictures and emails.
2. The email provider must have an account recovery process in place.
3. The user must provide accurate and valid information to verify their identity during the account recovery process.
4. The recovered pictures and emails must be in a usable format.

Non-functional dependencies of the recovery of deleted pictures from your system and emails from your email account include:

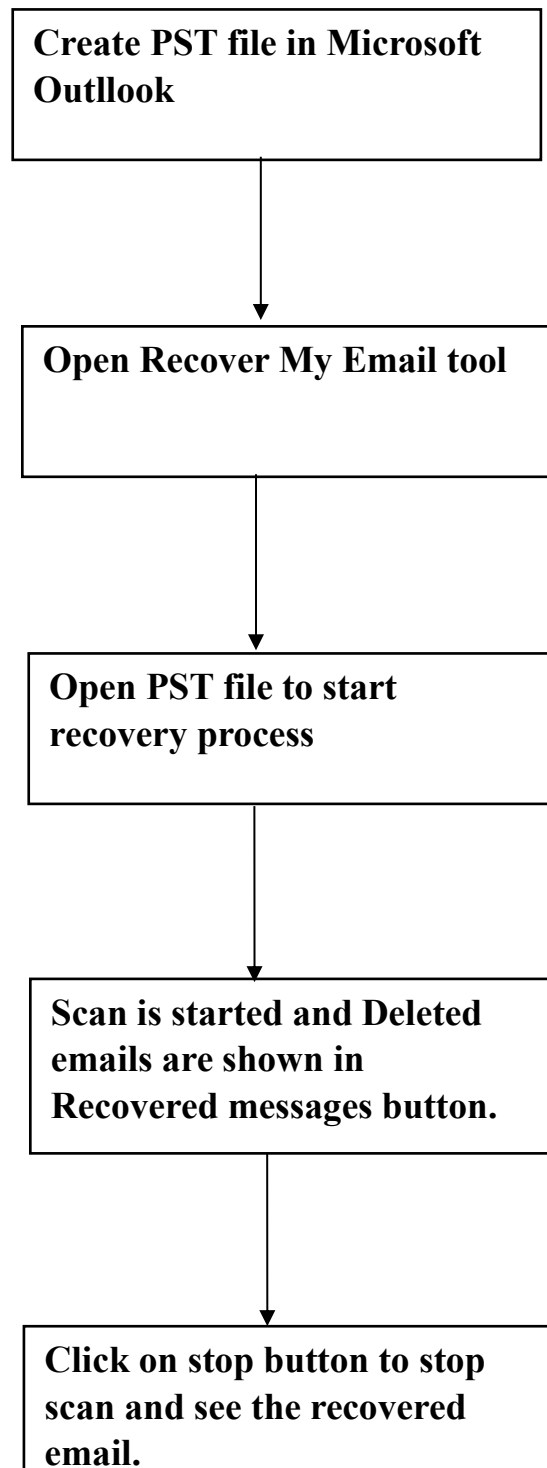
1. Performance: The speed of the recovery process may depend on the size of the hard drive or email account, the amount of data to be recovered, and the performance of the computer running the recovery software.
2. Reliability: The reliability of the recovery process will depend on the accuracy of the data recovery software and the email provider's account recovery process.
3. Security: The recovery process must ensure the security of the recovered data and any personal information used during the account recovery process.
4. Usability: The recovered pictures and emails must be easy to access and use for the user.
5. Compatibility: The recovered data must be compatible with the user's system and applications.

FLOWCHART

For recovery of deleted pictures:



For recovery of deleted emails:



ANALYSIS REPORT

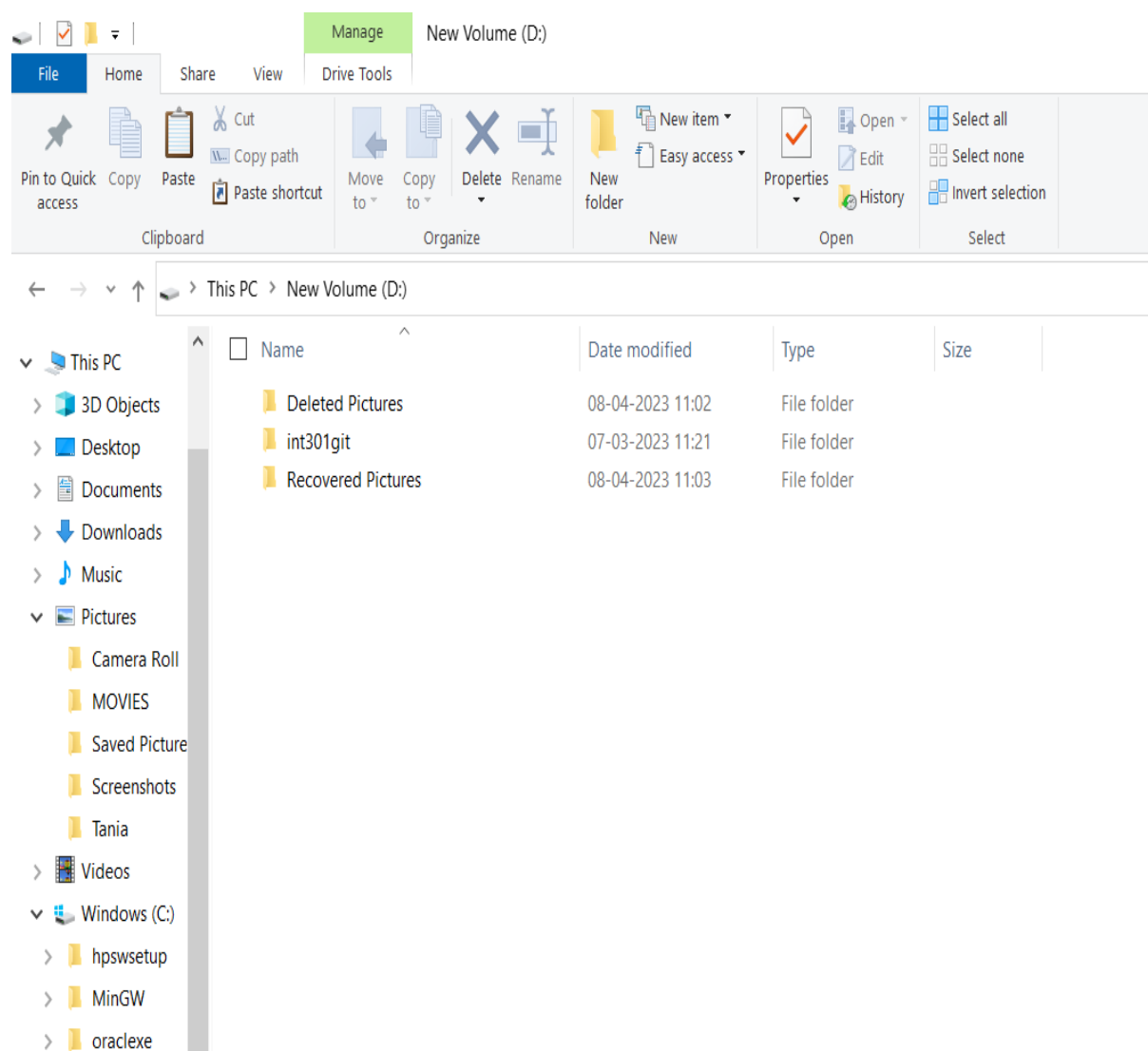
SYSTEM SNAPSHOTS AND FULL ANALYSIS REPORT

1. For Recovery of deleted pictures from your system:

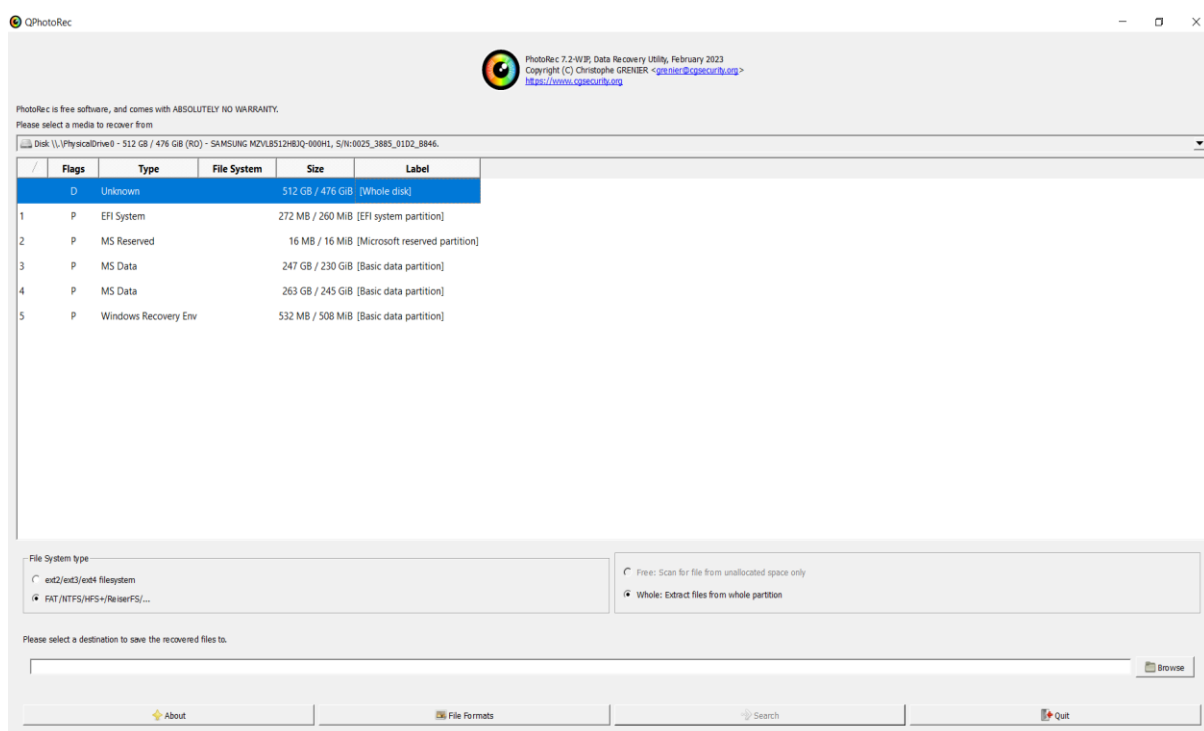
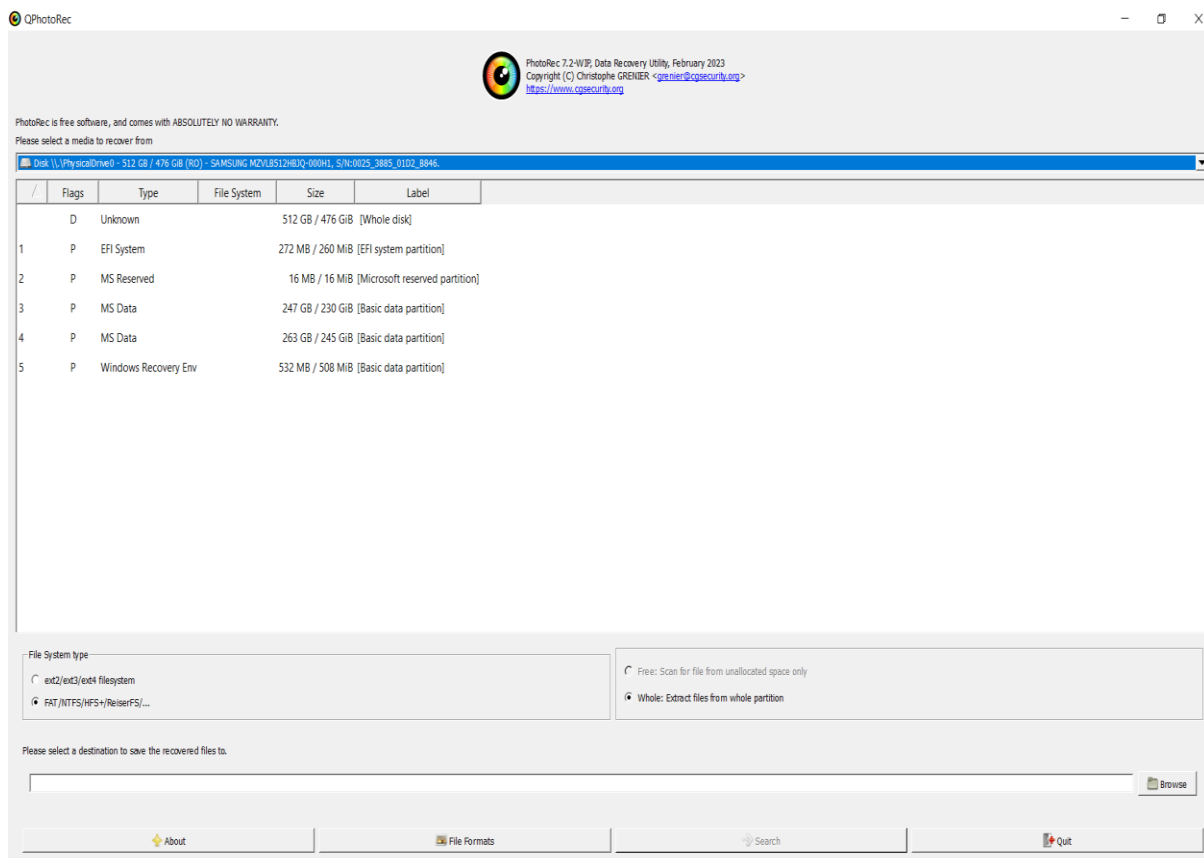
Recovery of deleted photos from your system using PhotoRec: PhotoRec is a free and open-source data recovery software that can recover lost files including photos, videos, and documents from a wide range of devices.

Step 1) Download and install PhotoRec on your system.

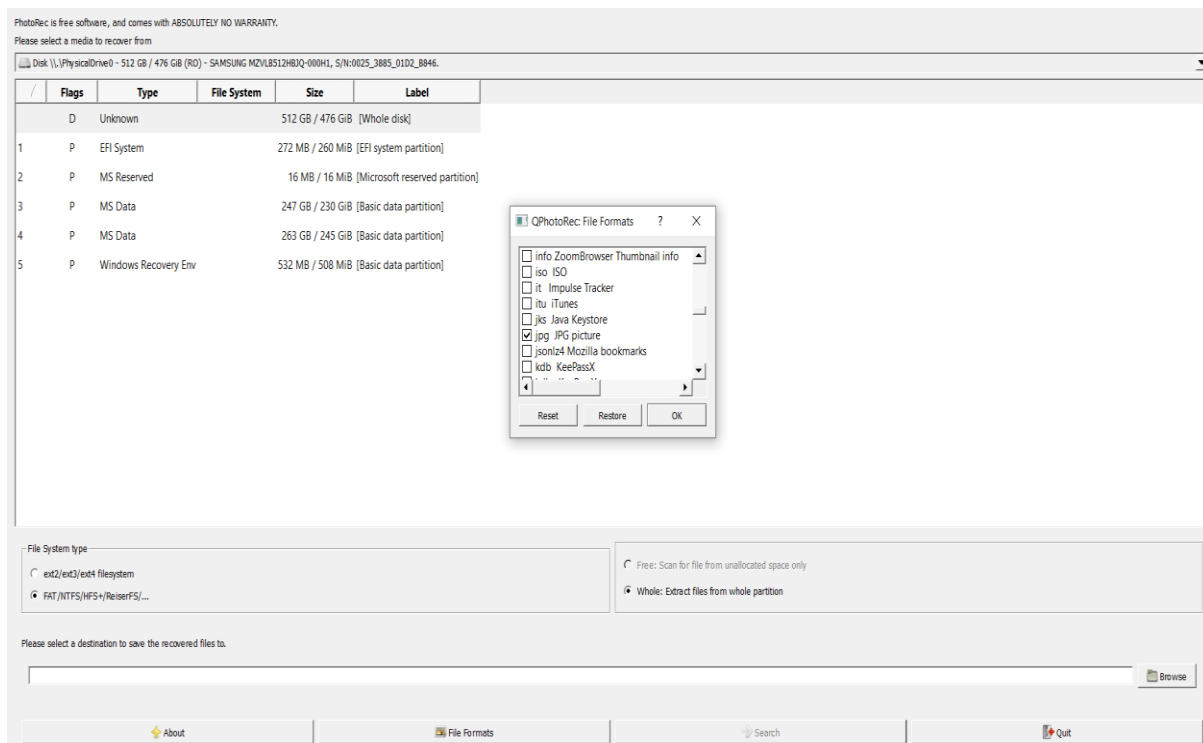
Step 2) Create Deleted pictures folder from which you will delete the pictures just for understanding and create another folder recovery pictures in which you will recover deleted pictures.



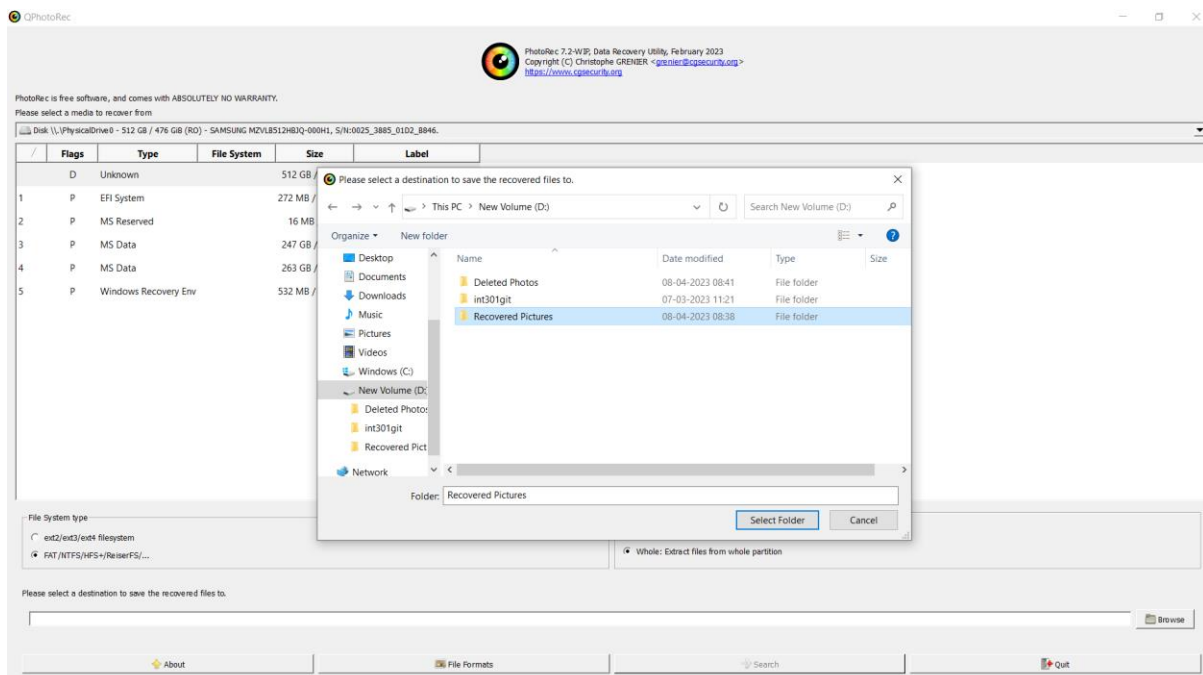
Step 3) Open the PhotoRec software and select the drive or partition from which the pictures were deleted.



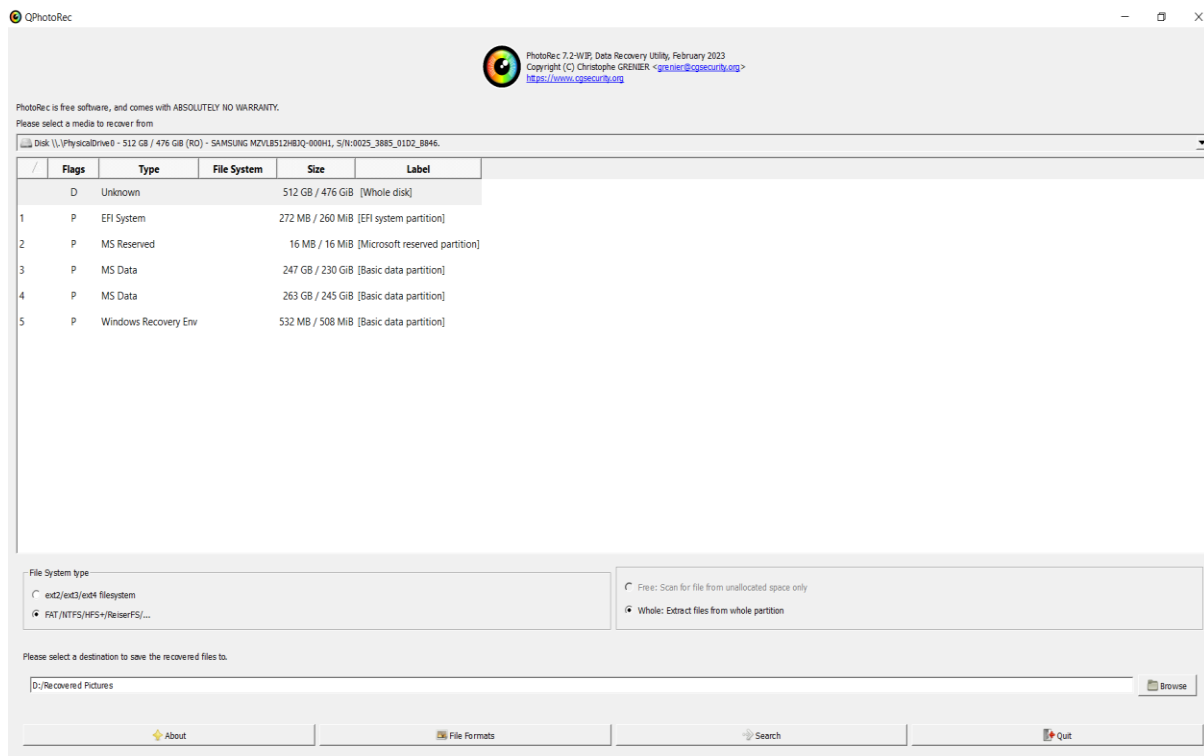
Step 4) Choose the file format of the pictures you want to recover (e.g. JPEG, PNG, etc.).



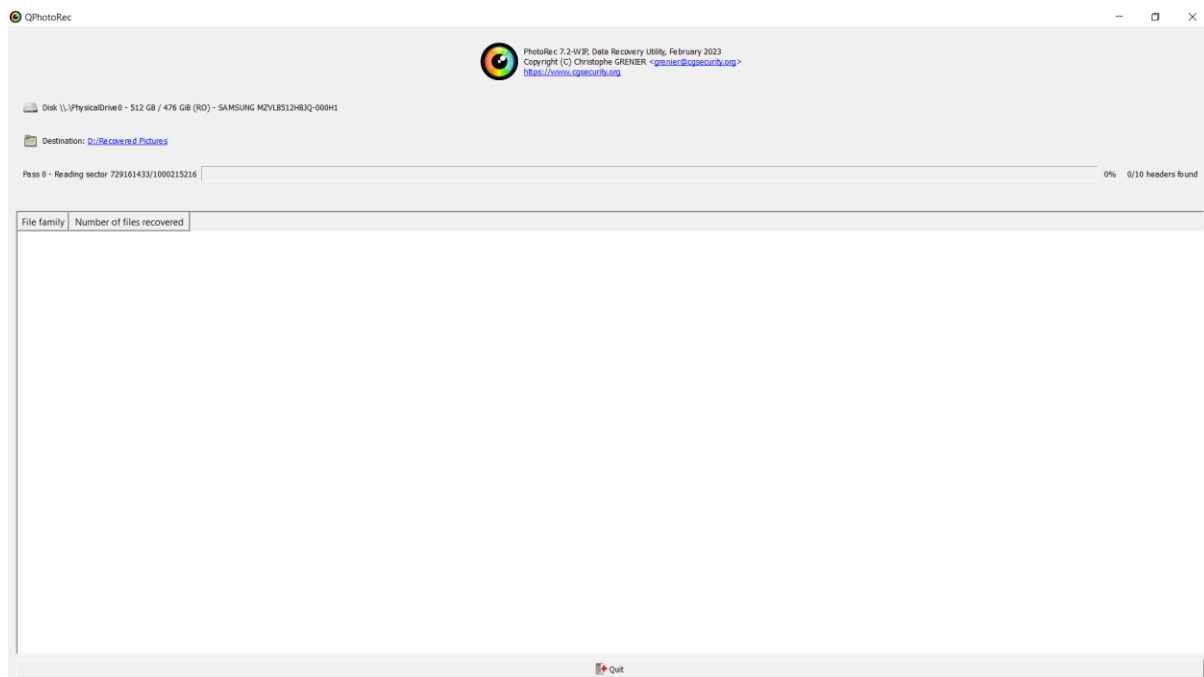
Step 5) Select a location to save the recovered pictures to (choose a different drive or partition to avoid overwriting any data).



Step 6) Click on the "Search" button to start the recovery process.




Step 7) Start the recovery process and wait for PhotoRec to scan the selected drive or partition for deleted pictures.



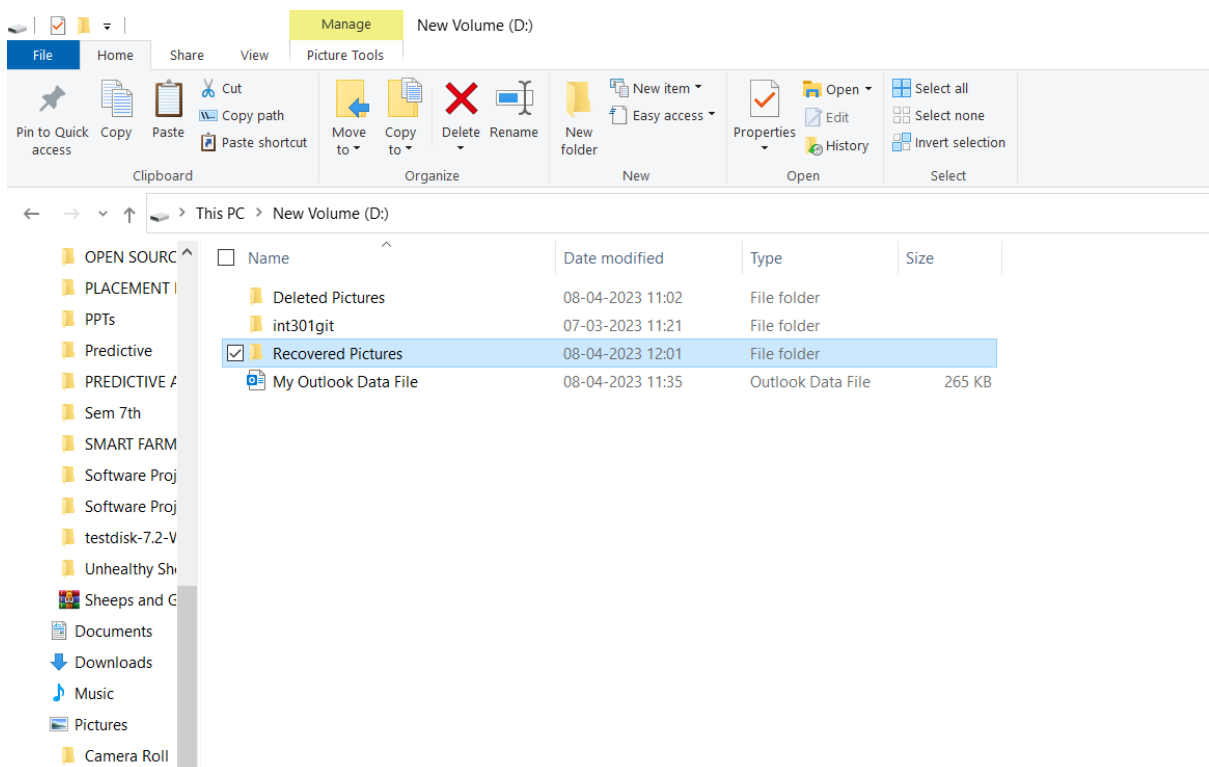
Step 8) Once the scan is complete, PhotoRec will display a list of recovered files. Browse through the list to find the pictures you want to recover.

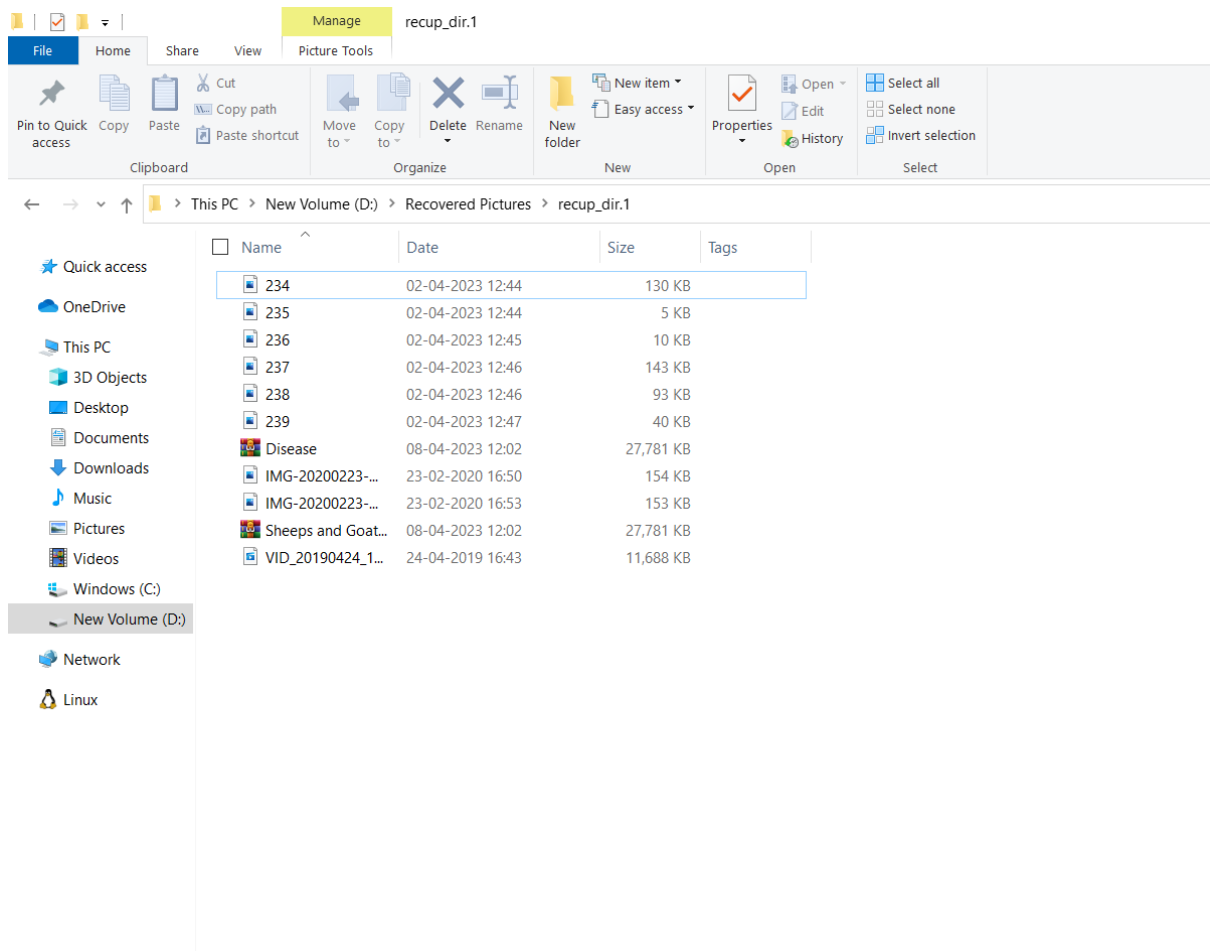
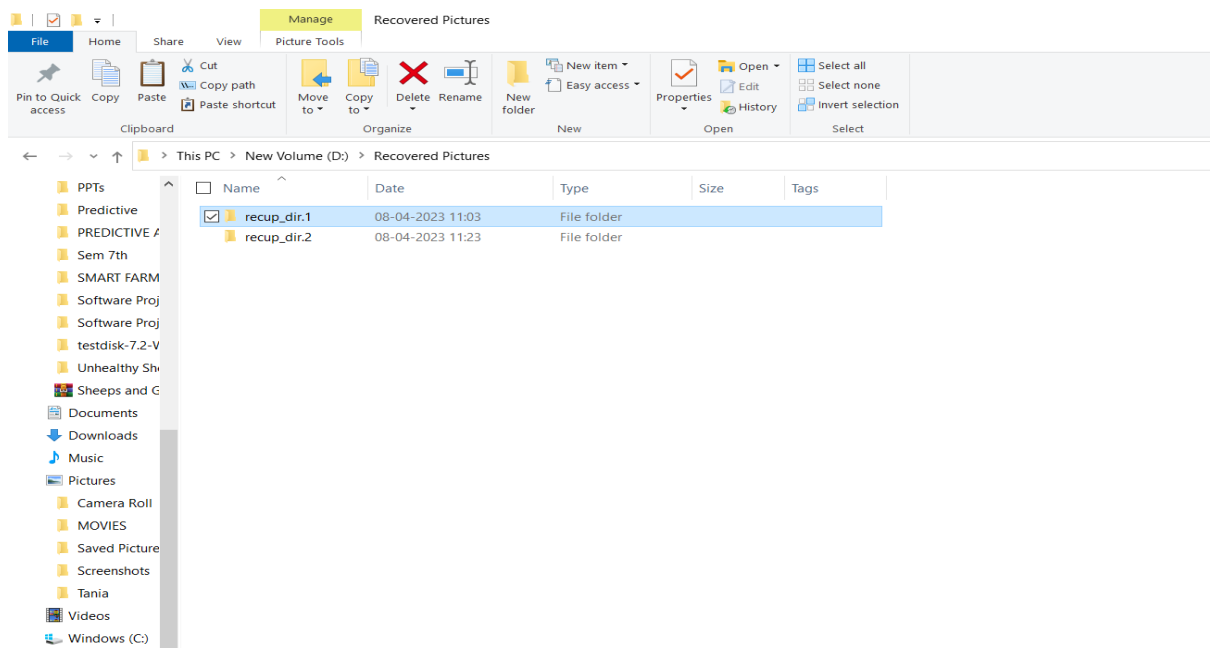
Step 9) Select the pictures you want to recover and click on the "Recover" button.

Recovery completed 

File family	Number of files recovered
elf	57
txt	7
exe	5
a	4
png	4
xz	2
jpg	2
mov	2
rar	1
iso	1
others	1

Step 10) PhotoRec will save the recovered pictures to the location specified in step 4.





2. For recovery of deleted emails from your email account:

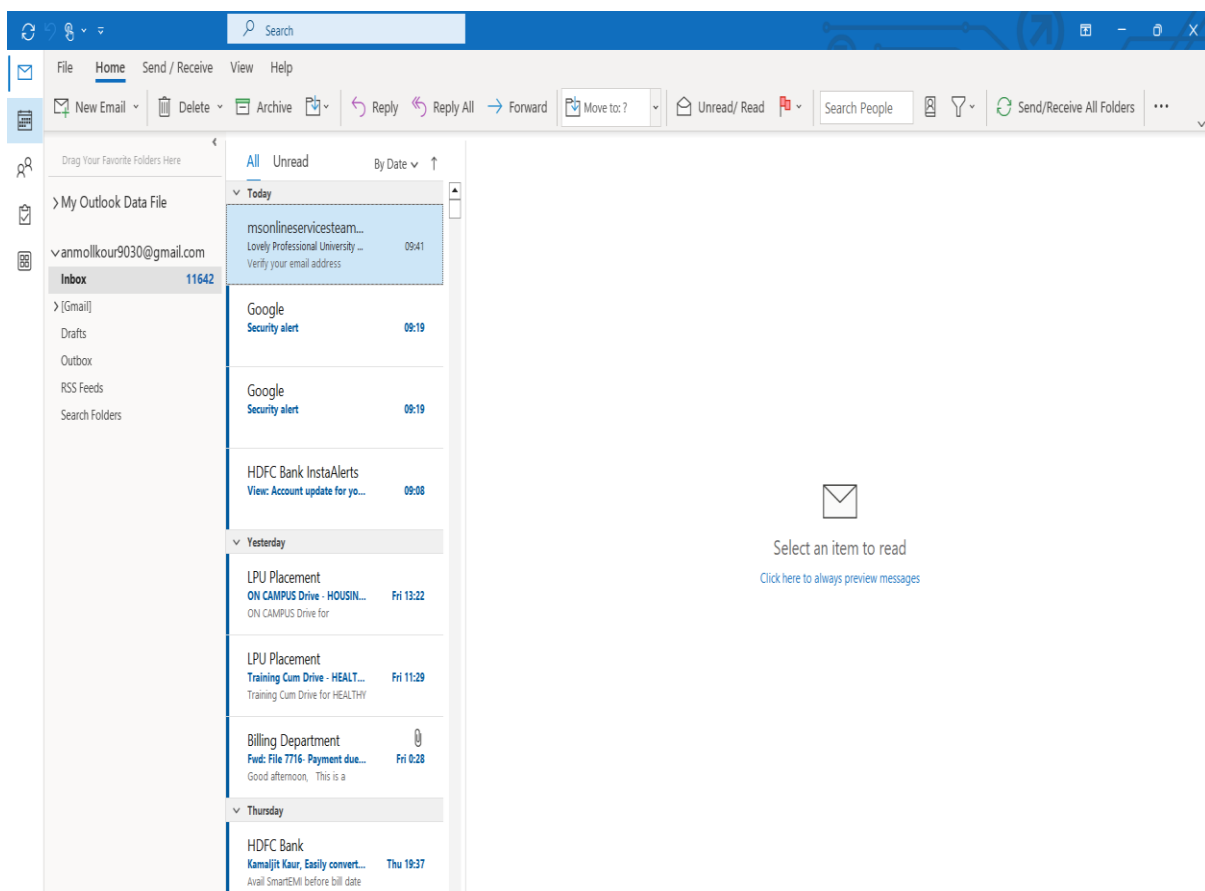
Firstly create PST file: A PST file (Personal Storage Table) is a file format used by Microsoft Outlook to store email messages, contacts, calendar items, and other data. It is a type of data file used by Microsoft Outlook to store messages and other data on your computer's hard drive. PST files are used to create archives of email messages or to backup email messages from an email account.

Secondly install Recover My Email tool: This tool can recover deleted or lost emails from your computer's hard drive, external drives, and other storage devices. It supports Microsoft Outlook email client.

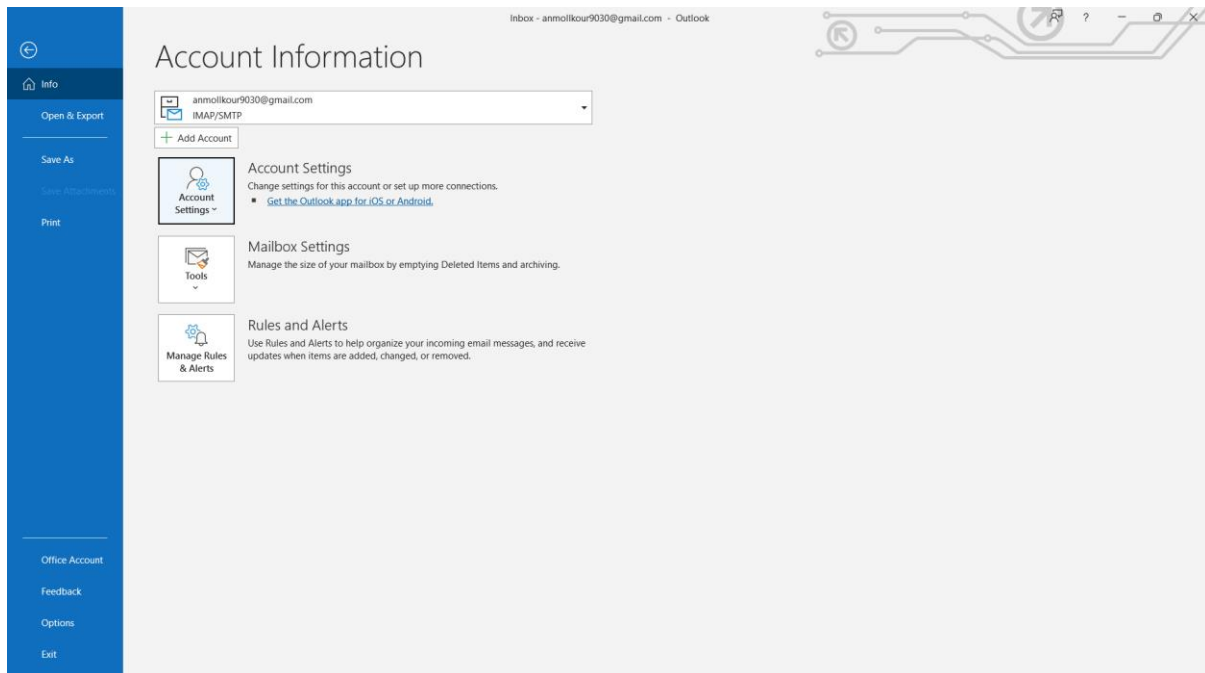
STEPS TO CREATE A PST FILE:

Step 1) Open Microsoft Outlook on your computer.

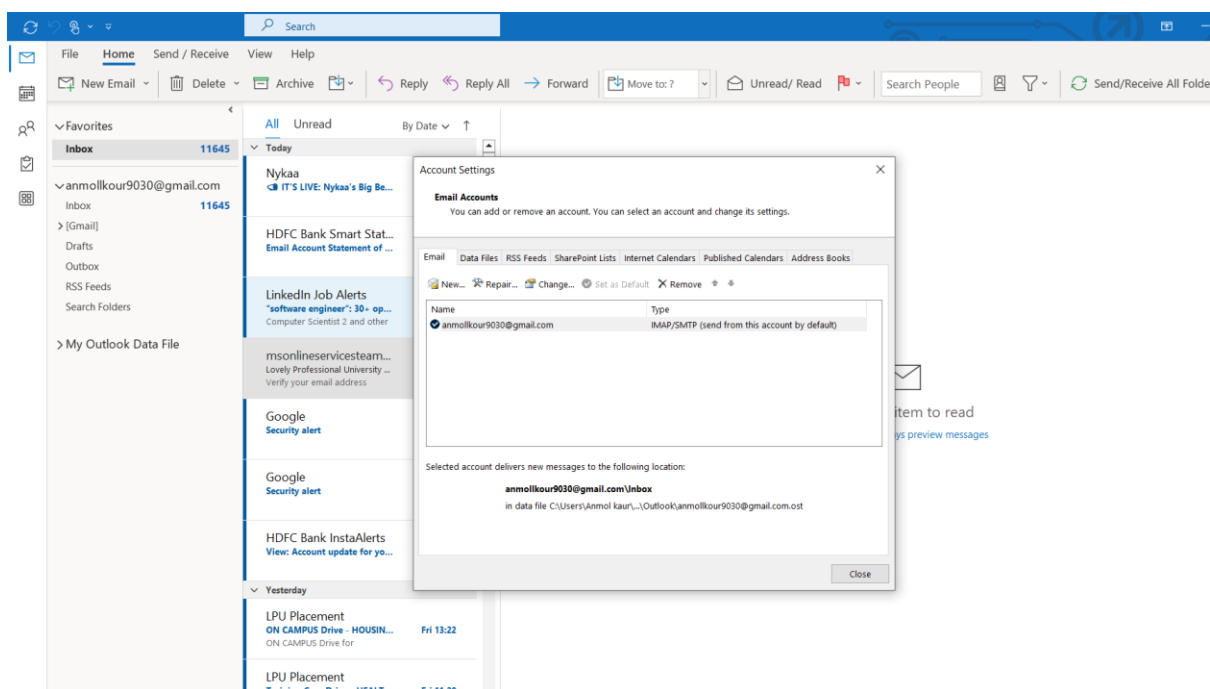
Step 2) Click on the "File" tab in the top left corner of the screen.



Step 3) Select "Account Settings" and then click on "Account Settings" again.



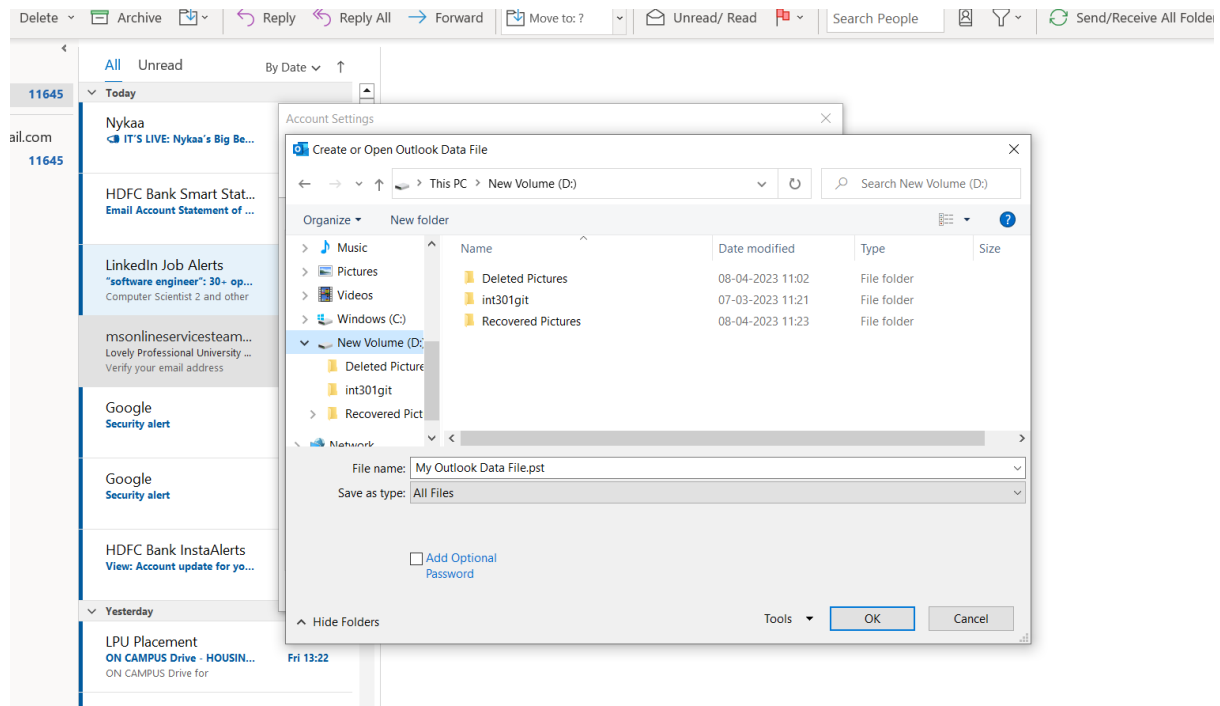
Step 4) In the Account Settings window, select the "Data Files" tab.



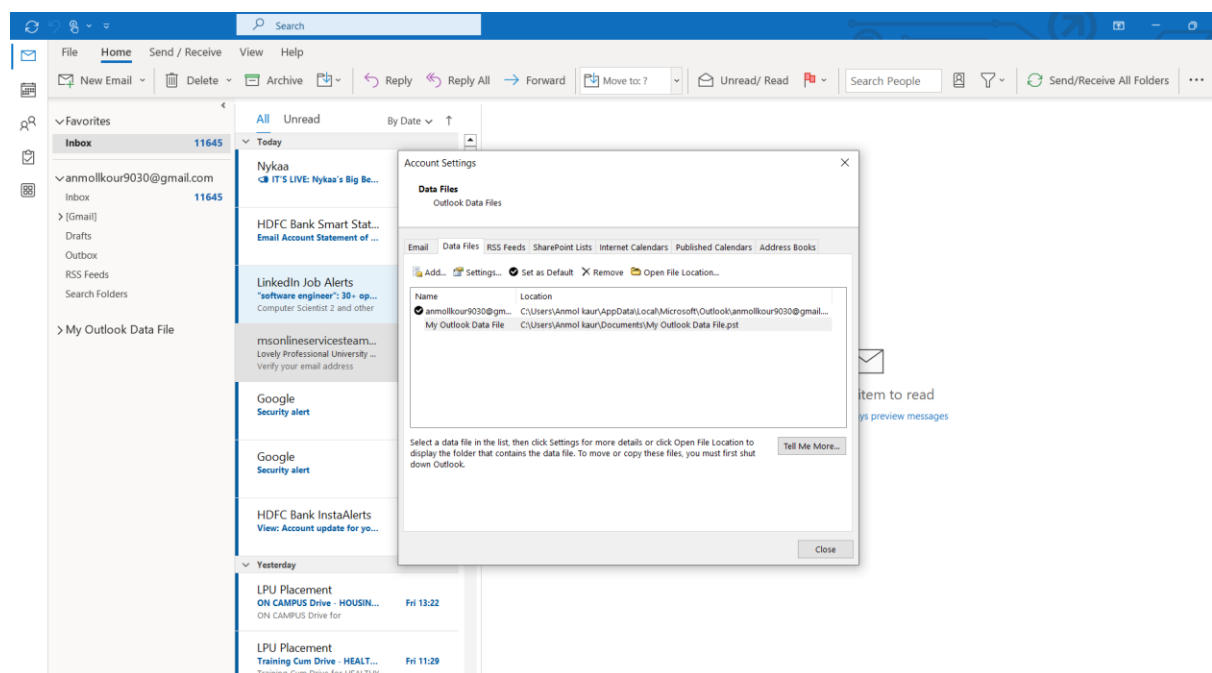
Step 5) Click on the "Add" button to create a new PST file.

Step 6) In the New Outlook Data File dialog box, select the type of PST file you want to create.

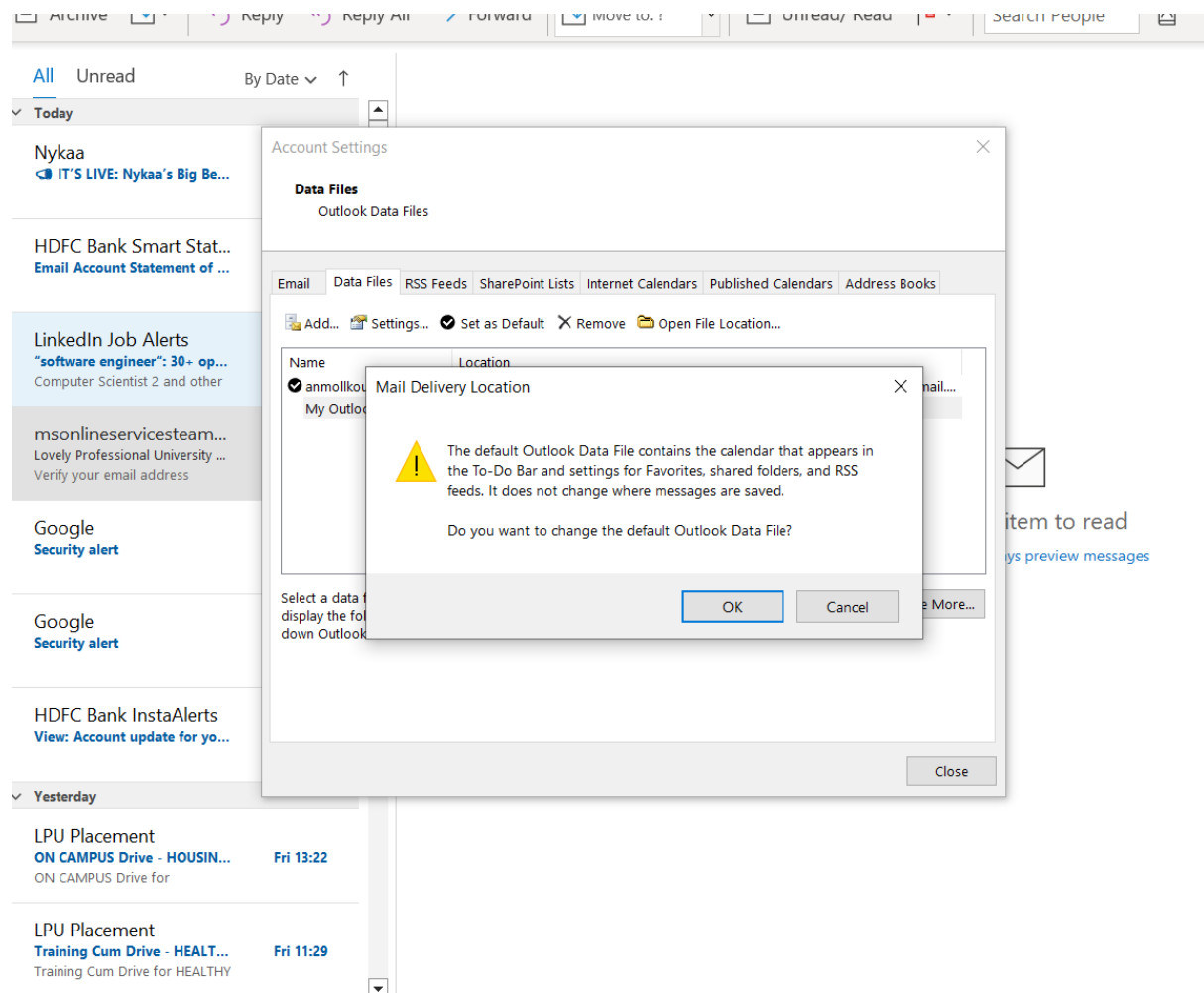
Step 7) Choose a name and location for the PST file and click on "OK".



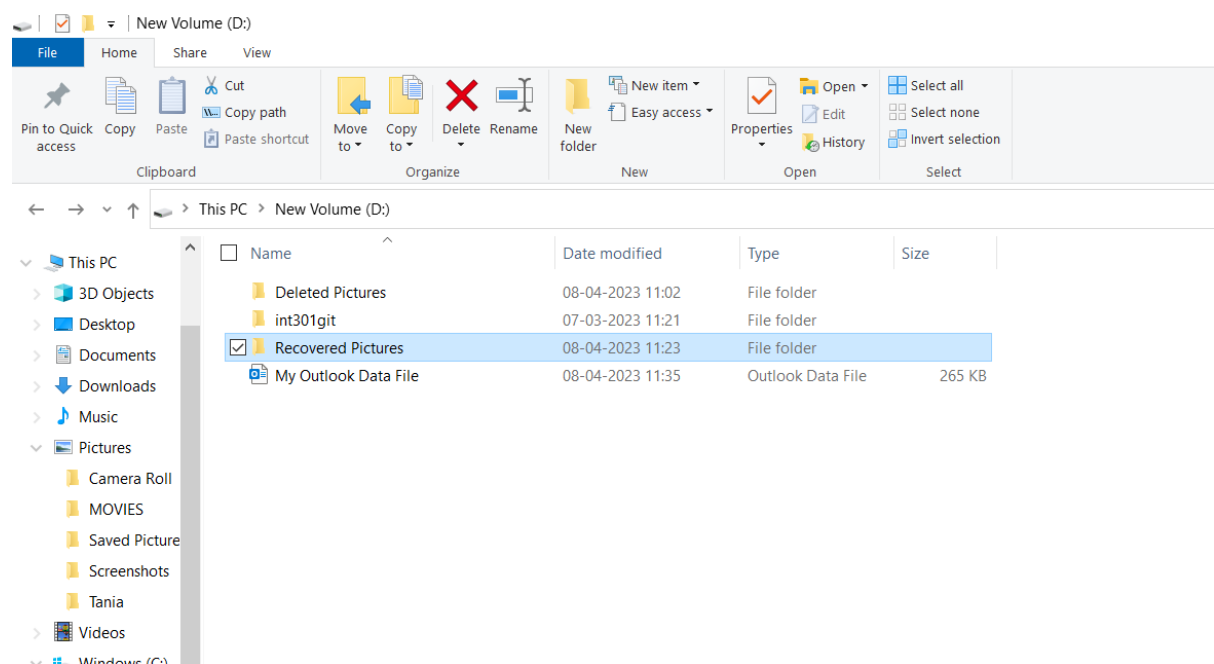
Step 8) Now see the new PST file listed in the Data Files tab.



Step 9) Select added PST file and set as default.



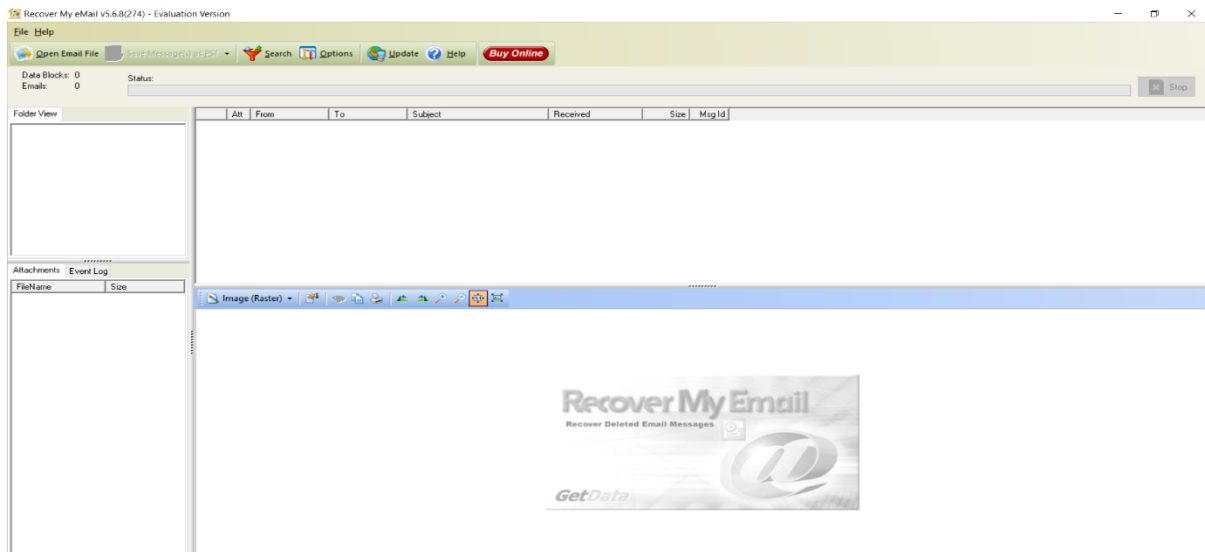
Step 10) Click on ok button and PST file is created.



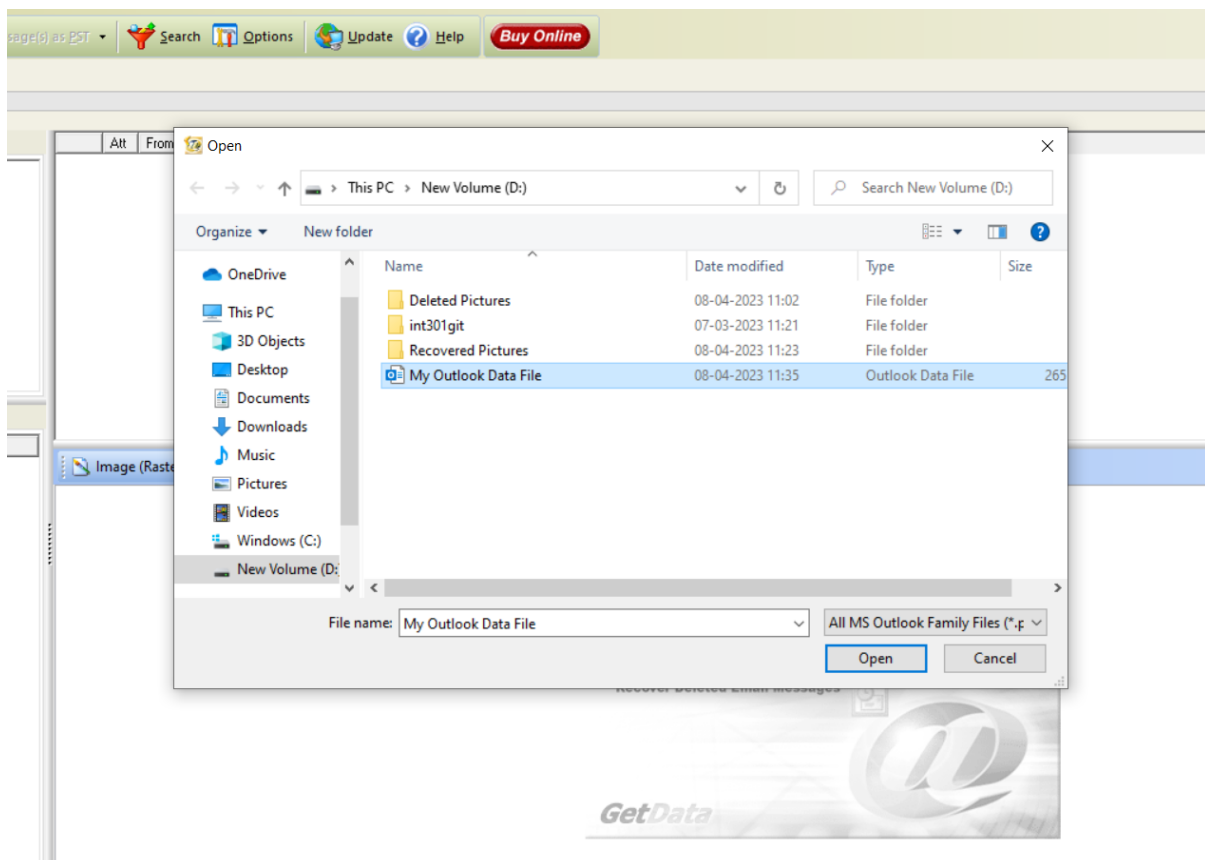
STEPS TO RECOVER DELETED EMAILS :

Step 1) Open Recover My Email tool.

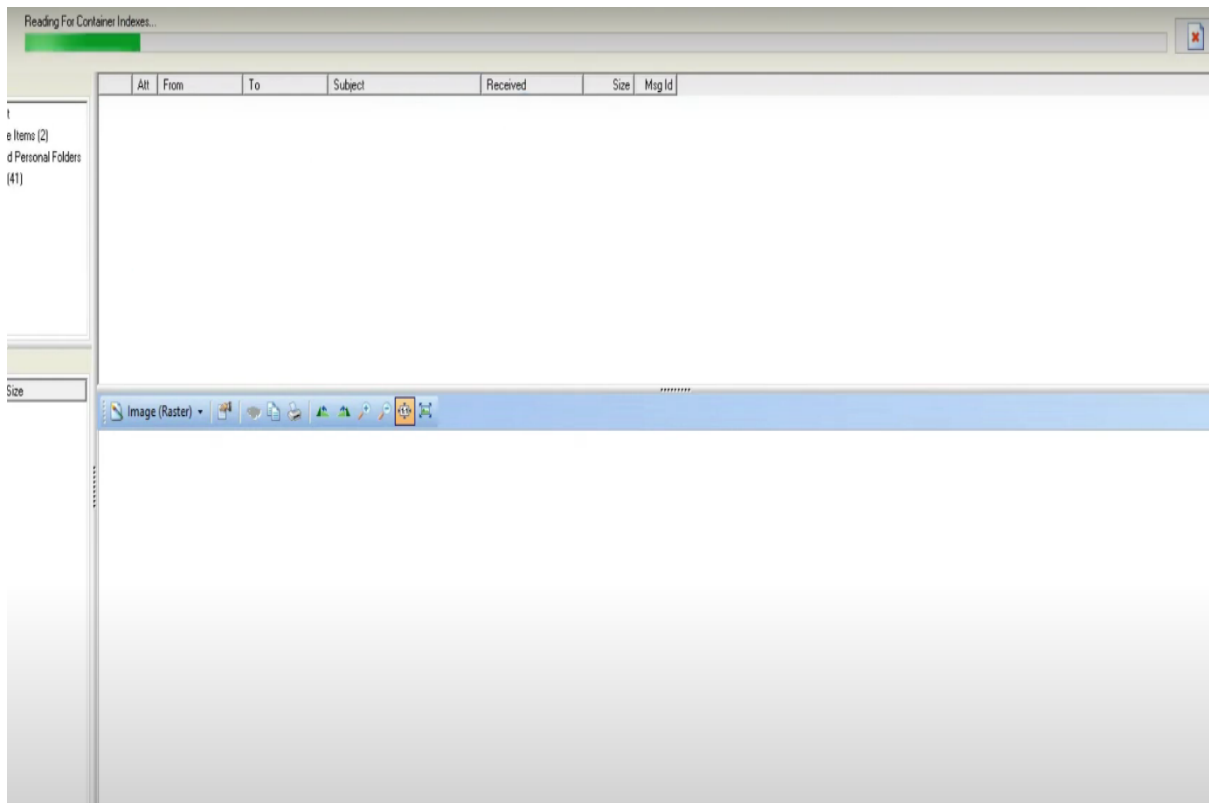
Step 2) Click on File -> Open Email File option.



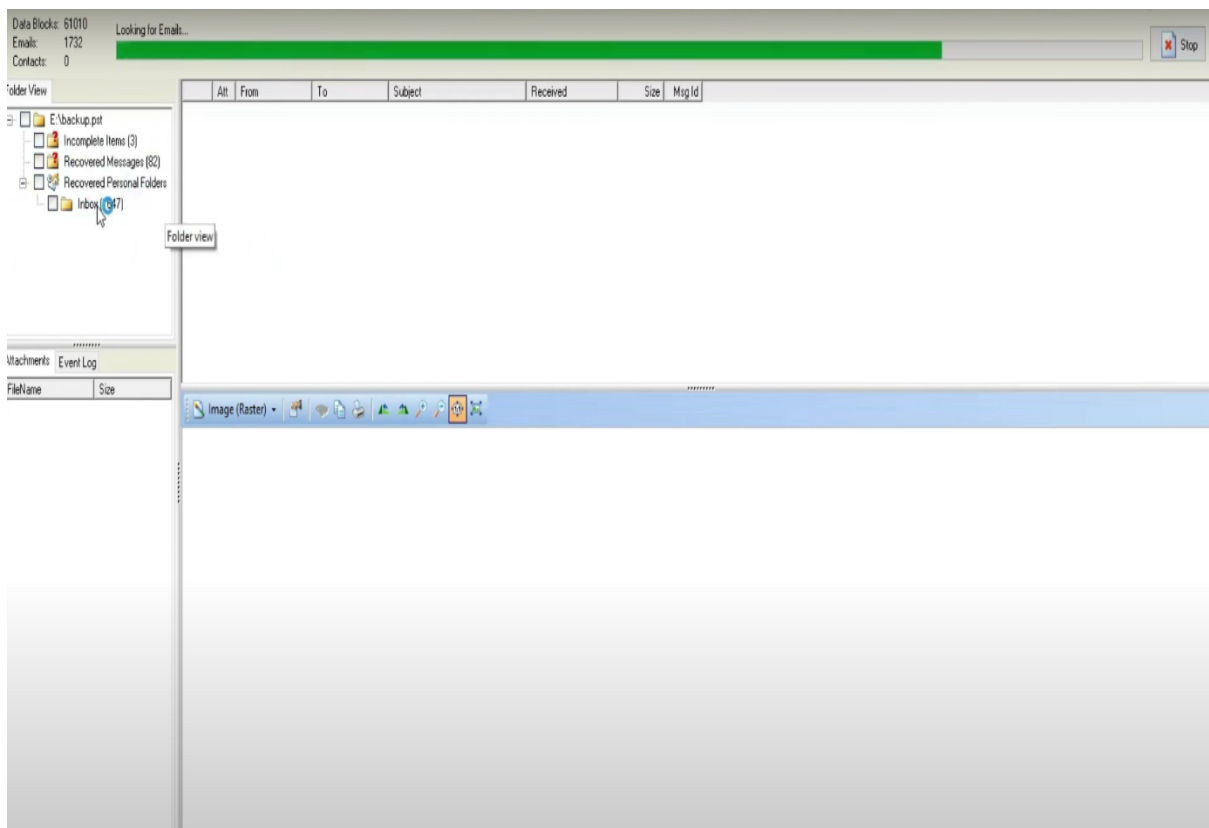
Step 3) Open created PST file.



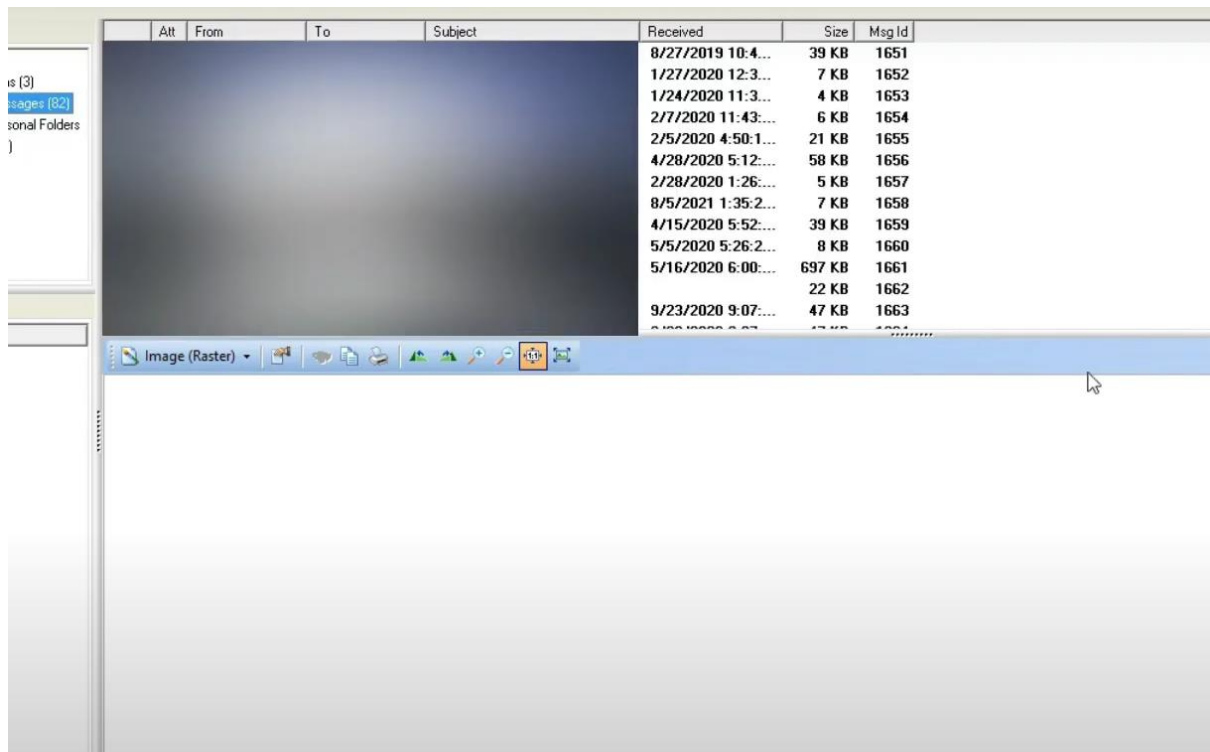
Step 4) Recovery Process is started.



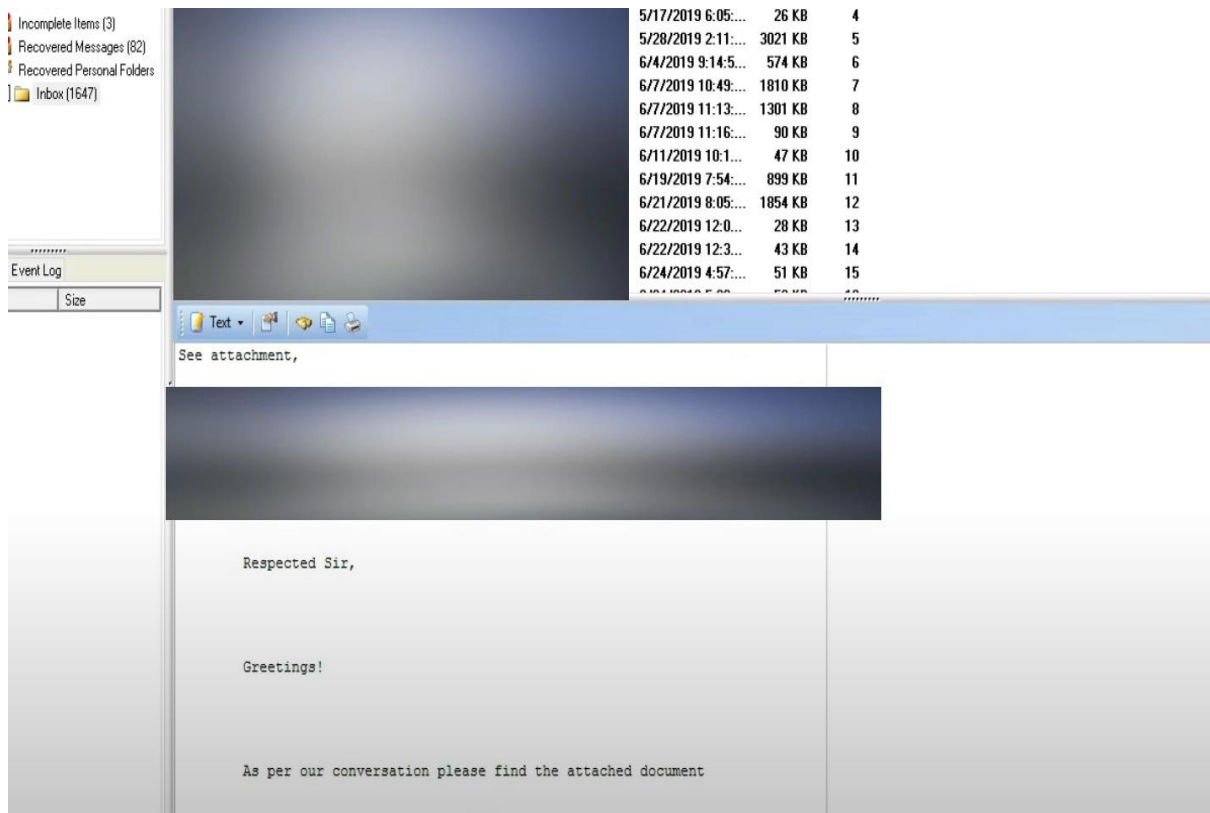
Step 5) In left side, Incomplete items, recovered messages, inbox buttons are shown.



Step 6) Click on recovered messages, the deleted emails will shown.



Step 7) Now stop the scan process by clicking on scan button and click on inbox button to see the deleted email messages.



REFERENCES

- <https://www.cgsecurity.org/wiki/PhotoRec>
- <https://getdata.com/recovermyemail>
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- <https://youtu.be/behDv6HEIrk>
- <https://youtu.be/lTw9nDuwNsw>