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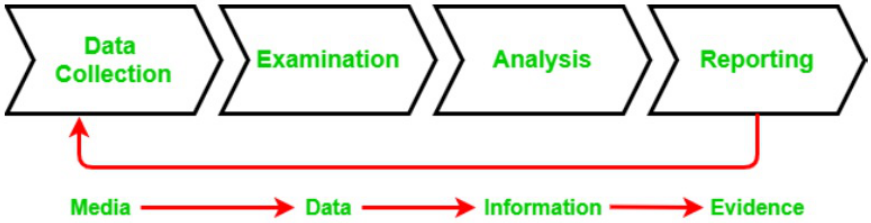
In the early 80s PCs became more popular and easily accessible to the general population, this also led to the increased use of computers in all fields and criminal activities were no exception to this. As more and more computer-related crimes began to surface like computer frauds, software cracking, etc. the computer forensics discipline emerged along with it. Today digital evidence collection is used in the investigation of a wide variety of crimes such as fraud, espionage, cyberstalking, etc. The knowledge of forensic experts and techniques are used to explain the contemporaneous state of the digital artifacts from the seized evidence such as computer systems, storage devices (like SSDs, hard disks, CD-ROM, USB flash drives, etc.), or electronic documents such as emails, images, documents, chat logs, phone logs, etc.

Process involved in Digital Evidence Collection:

The main processes involved in digital evidence collection are given below:

- **Data collection:** In this process data is identified and collected for investigation.
- **Examination:** In the second step the collected data is examined carefully.
- **Analysis:** In this process, different tools and techniques are used and the collected evidence is analyzed to reach some conclusion.
- **Reporting:** In this final step all the documentation, reports are compiled so that they can be submitted in court.



Types of Collectible Data:

The computer investigator and experts who investigate the seized devices have to understand what kind of potential shreds of evidence could there be and what type of shreds of evidence they are looking for. So, that they could structure their search pattern. Crimes and criminal activities that involve computers can range across a wide spectrum; they could go from trading illegal things such as rare and endangered animals, damaging intellectual property, to personal data theft, etc.

The investigator must pick the suitable tools to use during the analysis. Investigators can encounter several problems while investigating the case such as files may have been deleted from the computer, they could be damaged or may even be encrypted, So the investigator should be familiar with a variety of tools, methods, and also the software to prevent the data from damaging during the data recovery process.

There are two types of data, that can be collected in a computer forensics investigation:

- **Persistent data:** It is the data that is stored on a non-volatile memory type storage device such as a local hard drive, external storage devices like SSDs, HDDs, pen drives, CDs, etc. the data on these devices is preserved even when the computer is turned off

- **Volatile data:** It is the data that is stored on a volatile memory type storage such as memory, registers, cache, RAM, or it exists in transit, that will be lost once the computer is turned off or it loses power. Since volatile data is evanescent, it is crucial that an investigator knows how to reliably capture it.

Types of Evidence:

Collecting the shreds of evidence is really important in any investigation to support the claims in court. Below are some major types of evidence.

- **Real Evidence:** These pieces of evidence involve physical or tangible evidence such as flash drives, hard drives, documents, etc. an eyewitness can also be considered as a shred of tangible evidence.
- **Hearsay Evidence:** These pieces of evidence are referred to as out-of-court statements. These are made in courts to prove the truth of the matter.
- **Original Evidence:** These are the pieces of evidence of a statement that is made by a person who is not a testifying witness. It is done in order to prove that the statement was made rather than to prove its truth.
- **Testimony:** Testimony is when a witness takes oath in a court of law and gives their statement in court. The shreds of evidence presented should be authentic, accurate, reliable, and admissible as they can be challenged in court.

Challenges Faced During Digital Evidence Collection:

- Evidence should be handled with utmost care as data is stored in electronic media and it can get damaged easily.
- Collecting data from volatile storage.
- Recovering lost data.
- Ensuring the integrity of collected data.

Recovering information from devices as the digital shreds of evidence in the investigation are becoming the fundamental ground for law enforcement and courts all around the world. The methods used to extract information and shreds of evidence should be robust to ensure that all the related information and data are recovered and is reliable. The methods must also be legally defensible to ensure that original pieces of evidence and data have not been altered in any way and that no data was deleted or added from the original evidence.

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