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Assignment 3

# DFSC1316: Digital Forensic and Information Assurance I

## Assignment 3 (Due Tue, 11/3/2017 23:59:99)

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Rules:

1. All you answers will be typed unless otherwise being advised.
2. Submit you assignment in PDF version (Office word can be directly saved as PDF, or you can use virtual PDF printer to 'print' it as pdf).

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1. **(50 pts) File system is the system that operating system uses to manage and operate files stored on the storage device. Different operating systems, e.g., Mac, Windows, and Linus, use different file systems. During the class, we mentioned some name of typical file systems used on different operating systems, however, details of these file systems were not given.**
   **Do some search and research online, compare at least two file system on two different operating systems. Explain the major differences, the advantages as well as drawbacks. Your grade will be based on the detail and reasoning of your answer.**
   Windows uses NTFS file system while Linux uses the ext system. One of the biggest difference in the two file systems is that ext4 can handle much larger, contiguous files without fragmentation. The ext file system also marks blocks as occupied, so it is faster to write to. This techniques make the ext file system faster than the NTFS system. The ext system also allows nearly any character in a file or directory name and has no path-name length, while NTFS does not and limits the file-name length.

2. **(50 pts) Different from conventional hard drive, the Solid State Drive (SSD) stores and manages data in a different way, which creates new challenges to digital forensics. Do some search online, and explain how SSD differs from conventional hard drive, and how these differences affect digital forensics investigation.**
   **Note: there are some easy search results online, do not copy and paste. You are supposed to read some articles, and create your own thoughts. You won't get any credit if your answer is a direct copy, or slight change, from online resources.**
   Instead of moving an arm to select a sector on a Hard Disk Drive, Solid State Drives use sequential searches to find the data it is looking for. Since there are no moving components in a SSD, file access to many, small, different files is much faster than a HDD. Since SSD's use transistors to store data, they can only take a set number of write cycles. Since SSD's do not have sectors, deleted files do not necessarily remain. Deleted file fragments can easily be overwritten or deleted by garbage collection or space optimization processes.

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