**Level 1: Windows File Systems**

Refer to the following document when answering the questions for Level 1.

<https://fossbytes.com/fat32-vs-ntfs-vs-exfat-difference-three-file-systems/>

1. What is the definition of a file system?

A file system is basically a set of rules used to decide how data is stored and fetched in a storage device.

1. What are the three file systems used on Windows computers?

FAT32, NTFS, & exFAT are the three file systems that are commonly used for Windows and storage media running on Android and various other devices.

1. What are the properties of the FAT file system?
   1. The FAT file system was the original Windows 95 file system. When was it introduced?

It was introduced in 1977

* 1. How is the FAT16 file system different from the FAT32 file system?

The FAT16 file system is different from the FAT32 because the FAT16 can’t hold up as much storage as the FAT32 and the FAT32 has been synonymous with the word file system when we have to deal external storage media like removable drives.

* 1. What is the file size limit of the FAT32 file system?

4GB

* 1. What is the disk size limit of the FAT32 file system?

16TB

* 1. What other devices currently use the FAT file system?

The FAT file system are used in HDTV’s, DVD, and Blu-Ray players and practically a any device with a USB port.

1. What are the properties of the NTFS file system?
   1. The NTFS file system is what is used on current Windows computers. When was it introduced?

It was introduced in 1993

* 1. How is the NTFS file system different from the FAT file system?

The NTFS file system offers inexhaustible file size limits. The FAT file system has a file size limit of 4GB

* 1. What is the file size limit of the NTFS file system?

The file size limit of the NTFS file system is 16EB

* 1. What is the disk size limit of the NTFS file system?

The disk size limit of the NTFS file system is 256TB

* 1. What are some notable features of the NTFS file system?
     + It maintains a journal, a data structure which keeps track of any potential modifications to the file system and is used to recover the file system
     + It includes reparse points
     + Sparse file support
     + Disk usage quotas
     + Distributed link tracking
     + File level encryption
  2. What are some limitations regarding how other devices support the NTFS file system?  
     The NTFS system is supported by Windows XP and later versions. Apple’s MAC OSX provides read-only support for an NTFS-formatted drive and only a few Linux variants are able to provide write support for NTFS.

1. Provide a summary of the exFAT file system.

The exFAT is another Microsoft file system which finds its use in ball games where the FAT32 feels out of breath. Most modern digital cameras use exFAT. Most countries recognize the US Patent Law and thus, any implementation of the exFAT file system is not possible for the vendors which intend it to be a part of t an open-source operating system.

**Level 2: Windows NTFS Permissions**

Refer to the following document when answering the questions for Level 2.

<http://www.ntfs.com/ntfs-permissions.htm>

1. Read the information provided on the “Setting Permissions” page.
   1. Summarize how to view and set file and folder permissions.

Administrators can use the NFTS utility to provide access control for files and folders, containers and objects on the network as a type of system security. NTFS (NT File System) permissions are available to drives formatted with NTFS. The advantage with NTFS permissions is that they affect local users as well as network users and they are based on the permission granted to each individual user at the Windows logon, regardless of where the user is connecting from.

1. Read the information provided on the “Advanced Permissions” page.
   1. List the advanced permissions that affect files.
      * Traverse Folder/Execute File
      * List Folder/Read Data
      * Read Attributes
   2. List the advanced permissions that affect folders.
      * Traverse Folder
      * List Folder
2. Read the information provided on the “Basic Permissions” page.
   1. The basic permissions are listed at the top of the columns in the table. List the 6 basic permissions.
      * Basic Full Control
      * Basic Modify
      * Basic Read & Execute
      * Basic List Folder Contents
      * Basic Read
      * Basic Write
   2. What basic permissions allow a user to write data to a file?
      * Create Files/Write Data
      * Create Folders/Append Data
      * Write Attributes
      * Read Permissions
      * Synchronize
   3. What basic permissions allow a user to delete a folder?
      * Basic Full Control
      * Basic Modify
3. Why do you think there are separate permissions for reading and writing a file? Provide an example where you might want somebody to read a file but not be able to change it.

There might be separate permissions for reading and writing files because users depending on what they want to do, might just want to read whatever data is in the file or want to write in the file to update and change it. An example where I would want somebody to read a file but not write or change it is if I make the file a read-only type file, because then they cannot write anything since the file is locked to read-only.

1. Why do you think there are separate permissions for listing folders and reading files? Provide an example where you might want somebody to be able to list a folder but not be able to read a file in the folder.

I think there are separate permissions for listing folders and reading files because they are two different functions that users can use when they are on their PC. Depending on what the user wants to do, they might want to do one but not the other. An example would be maybe if I send someone a folder, that if they want to access the data and the files within that folder, they would have to ask the owner of it which would be me.

**Level 3: Windows Share Permissions**

Refer to the following document when answering the questions for Level 3.

<https://blog.netwrix.com/2018/05/03/differences-between-share-and-ntfs-permissions/>

1. What are share permissions?

Share permissions manage access to folders shared over a network; they don’t apply to users who log on locally

* 1. Who do share permissions affect?

NTFS share permissions affect both local users and network users and that they are based on the permissions granted to an individual

* 1. Who do share permissions not affect?

Share permissions don’t apply to users who log on locally. Share permissions apply to all files and folders in the share.

* 1. Summarize the 3 types of share permissions.

**Read –** Users can view file and subfolder names, read data in files, and run programs. By default, the “Everyone” group is assigned “Read” permissions

**Change –** Users can do everything allowed by the “Read” permission, as well as add files and subfolders, change data in files, and delete subfolders and files. This permission is not assigned by default.

**Full Control –** Users can do everything allowed by the “Read” and “Change” permissions, and they can also change permissions for NTFS files and folders only. By default, the “Administrators” group is granted “Full Control” permissions.

1. Summarize the main difference between NTFS and Share Permissions.

* Share permissions are easy to apply and manage, NTFS permissions enable more control of a shared folder and its contents
* Share permissions can be used when sharing folders in FAT and FAT32 file systems: NTFS permissions cannot
* NTFS permissions apply to users who are logged on the server locally: share permissions do not
* Unlike NTFS permissions, share permissions allow you to restrict the number of concurrent connections to a shared folder

1. Summarize how to view and change share permissions.

* Right-click the shared folder
* Click “Properties”
* Open the “Sharing” tab
* Click “Advanced Sharing”
* Click “Permissions”
* Select a user or group from the list
* Select either “Allow” or “Deny” for each of the settings

**Level 4: Your Files and Folders**

1. Organize your files and folders on your network drive to match your GitHub repository.
   1. Create a folder on your student drive for Computer Science Work
   2. Create sub-folders (e.g. Topic A, etc.) to match the folders on your GitHub repository
   3. Move your answer files and other work you have done for this course into the proper sub-folders.
   4. Show your organized folders/files to Mr. Nestor