**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 retrieved in a storage device.
2. What are the three file systems used on Windows computers?  
   The three file systems used on Windows computers are FAT32, NTFS, AND exFAT.
3. 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?

FAT16 offered limited volume size compared to FAT32.

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

The file size limit is 4 GB.

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

The disk size limit is 16TB.

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

Flash drives, gaming consoles, HDTV’s, DVD and BluRay players, and 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?

NTFS file system offers inexhaustible file size limits whereas FAT file system only offers 4 GB file size limit.

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

The file size limit is inexhaustible(16 EB) but now it has changed to 256 TB.

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

The disk size limit is also inexhaustible but it has changed to 256 TB.

* 1. What are some notable features of the NTFS file system?

Partition shrinking, self-healing, and NTFS Symbolic links, reparse points, sparse file support, disk usage quotas, distributed link tracking, and file-level encryption.

* 1. What are some limitations regarding how other devices support the NTFS file system?  
     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 file system is another Microsoft proprietary file system. ExFAT is used by most of the modern digital cameras, SDXC memory cards are now pre-formatted with the exFAT file system. With this file system you will not face any problems while copying full length HD movies . It has the same file system limit as NTFS which is 16 EB, but it doesn’t contain many of the extra features that NTFS contains. It supports Mac, Android, and Windows operating systems but doesn’t support Linux as much.

**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.

Summarize how to view and set file and folder permissions.

1)Right-click a file or folder and choose properties from the menu.

2)Click on the security tab and under Group or user names, select or add a group or user.

3)At the bottom, allow or deny one of the available permissions.

1. Read the information provided on the “Advanced Permissions” page.
   1. List the advanced permissions that affect files.

Execute File: Allows or denies running program (executable) files.

Read Data: Allows or denies viewing data in files.

Create Files: Allows or denies creating files within the folder.

Delete Subfolders and Files: Allows or denies deleting subfolders and files, even if the Delete permission has not been granted on the subfolder or file.

Take Ownership: Allows or denies taking ownership of the file or folder. The owner of a file or folder can always change permissions on it, regardless of any existing permissions that protect the file or folder.

* 1. List the advanced permissions that affect folders.

List Folder: Allows or denies viewing file names and subfolder names within the folder. List Folder only affects the contents of that folder and does not affect whether the folder you are setting the permission on will be listed.

Traverse Folder: Allows or denies moving through a restricted folder to reach files and folders beneath the restricted folder in the folder hierarchy. Traverse folder takes effect only when the group or user is not granted the "Bypass traverse checking user" right in the Group Policy snap-in. This permission does not automatically allow running program files.

Take Ownership: Allows or denies taking ownership of the file or folder. The owner of a file or folder can always change permissions on it, regardless of any existing permissions that protect the file or folder.

1. 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

* 1. What basic permissions allow a user to write data to a file?

-Create files/write data

-Create folders/append data

-Write attributes

-Write extended attributes

-Read permissions

-Synchronize

* 1. What basic permissions allow a user to delete a folder?  
     -Basic full control

-Basic modify

1. 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.  
     
   I think that there are separate permissions for reading and writing a file because sometimes you want someone to read your work but you don’t want them making changes to it. For example, if a teacher has given a project and they have written the instructions in a file and has shared it with the whole class, he/she wouldn’t want any student making changes as it would affect the whole class. The class may get the wrong information and do the whole project wrong.
2. 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 sometimes someone may have important information in a file that they do not want someone to see. Listing just means that they can see WHAT files are in the folder but they can’t OPEN any file to see what’s inside. An example could be of a hospital. Doctors would not want that anyone other than them to access patients’ reports but they may need someone to check if the file or report is present.

**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?
   1. Who do share permissions affect?

Share permissions affect people with whom one would like to share a folder or file.

* 1. Who do share permissions not affect?

Share permissions do not affect users who log on locally.

* 1. Summarize the 3 types of share permissions.  
     The 3 types of share permissions are read, change, and full control.

READ- Users can view the content in files as well as the names of the files/subfolders and also run programs. Permissions granted to the “Everyone” group.

CHANGE-All work that can be done with the read permission can be done here too. You can add files and subfolders, change data in files and delete files/subfolders. Permission not granted by default.

FULL CONTROL-All work allowed in read and change permissions can be done and they can change permissions for NTFS files and folders only. Permissions granted to “Administrators” group.

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

The main difference between NTFS and Share Permissions is that NTFS permissions apply to users who are logged on locally whereas share permissions are not. Also share permissions are easy to apply and manage, but NTFS permissions enable more granular control of a shared folder and it’s contents.

1. Summarize how to view and change share permissions.
2. Right-click the shared folder.
3. Click “Properties”.
4. Open the “Sharing” tab.
5. Click “Advanced Sharing”.
6. Click “Permissions”.
7. Select a user or group from the list.
8. Select either “Allow” or “Deny” for each of the settings.

**Level 4: Your Files and Folders**

1. Organized 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