**CST – 221 File System**

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CST-221

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GitHub: <https://github.com/romanparkhomenko/CST-221/tree/master/FileSystem>

Activity Directions:

In this assignment you will do research on File Systems and the Linux System File I/O functions. The following are the tasks you need to complete for this assignment:

1. Explore the Linux File System in your VirtualBox Ubuntu installation. Document the purpose (two to three sentences) for each of the following directories.

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| **Directory** | **Purpose** |
| / | The root directory is the base “container” for all filesystems. It contains the primary directories to boot, recover, restore, and repair the operating system. |
| /bin | The /bin, or binaries directory contains the executable scripts and commands for the operating system. This directory is the primary reason we can run common commands in the terminal. |
| /dev | The /dev, or device directory contains the configuration files for hardware devices attached to the computer such as hard drives or I/O devices. |
| /etc | The /etc directory stores system configuration files to control the operation of any programs for all users on a system. |
| /lib | The /lib, or libraries directory contains shared libraries and kernel modules to be able to boot and run commands in the system. |
| /boot | The boot directory contains all of the necessary configuration files to boot up a system. The boot directory stores the functionality required for the kernel to start user-space programs. |
| /home | The /home directory provides a user-specific directory for individual users to have their own Documents/Downloads etc… |
| /mnt | The /mnt or mount directory is used as a mount point for temporary filesystems and removable storage such as USB drives. |
| /proc | The /proc or process directory is a virtual directory and it’s purpose is store process information sent from the kernel. |
| /tmp | The /tmp or temporary directory is used as a temporary storage file for applications. Any files stored here are removed when the application is closed down. |
| /usr | The /usr or user directory is a secondary filesystem that replicates some of the root directory with it’s own read-only bin and lib directories. |
| /var | The /var or variable directory has the purpose of storing variable data such as caches, event logs, and even emails. These files are similar to the /tmp directory but they persist even if the application closes or system shuts down. |
| /sbin | The /sbin directory contains essential system binaries to execute superuser-specific administrative commands. |
| /kernel | The /kernel directory contains the specific build commands and source files for the Linux distribution. |

1. Using the Ubuntu *Files* (i.e., File Explorer) application go to the root directory of your system. For each directory under the root directory list the name of the directory and document its purpose (two to three sentences).

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| **Directory** | **Purpose** |
| /bin | See Table 1. |
| /cdrom | The cdrom directory seems to exist for legacy purposes to mount CD-ROM discs when the /mnt or /media directories don’t recognize the device. From my research it seems that devices can actually be mounted anywhere, and this directory exists for specific customization if need be. |
| /etc | See Table 1. |
| /lib | See Table 1. |
| lost+found | The lost+found directory acts as a storage for files that may have been deleted but were still being used by a process. These files are usually slated for deletion and typically don’t contain useful data. |
| /mnt | See Table 1. |
| /proc | See Table 1. |
| /run | The /run directory is similar to the //var directory, but is meant for system daemons that require storage very early in the boot process. |
| /snap | The snap directory is a storage space for snap packages, which seems to be a third-party system to quickly manage several Linux distributions on a single machine. |
| /tmp | See Table 1. |
| /var | See Table 1. |
| /boot | See Table 1. |
| /dev | See Table 1. |
| /home | See Table 1. |
| /lib64 | This is the libraries directory which contains the shared libraries for boot the system but is specifically for a 64bit system. |
| /media | The /media folder does the same thing the /mnt folder does by providing a location from removable hardware such as CD’s and USB Drives to mount a temporary filesystem. |
| /opt | The opt directory is similar to the /usr/local directory in that it stores the configuration files for different application installations. It’s not really clear, but the difference between opt and usr/local seems to be that usr/local is read-only. |
| /root | The /root directory is a separate home directory for whoever is signed in as the root user. |
| /sbin | See Table 1. |
| /srv | The /srv directory contains server configuration files for when the machine is being used as a server. |
| /sys | The system directory is another virtual directory that contains information to send back to the kernel. |
| /usr | See Table 1. |
| vmlinuz | I thought this was a directory, but it turns out this is the actual, bootable compressed Linux kernel. |

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