**Blog Post Title: Comparing Windows, macOS, and Linux Operating Systems**

**KT1901: Files and Directories, Naming Conventions, and the File Allocation Table (FAT)**

**1.**

**1.1. Directory Structure**

* **Windows**: Uses a drive-based structure (e.g., C:\Users\Vincent\Documents). Drives like C:\ or D:\ represent physical or logical storage.
* **macOS**: Uses a UNIX-like directory tree (e.g., /Users/john/Documents), beginning at the root /.
* **Linux**: Also uses a UNIX-like structure, starting at / and branching into /home, /etc, /usr, etc

**1.2. File Paths**

* **Windows**: Uses backslashes \ → e.g., C:\Program Files\App.
* **macOS & Linux**: Use forward slashes / → e.g., /usr/bin/app.

**2. Naming Conventions**

* **Windows**:
* Not case-sensitive.
* Cannot use characters like \ / : \* ? " < > |.
* **macOS**:
* Typically not case-sensitive but can be configured to be.
* Avoids : in names.
* **Linux**:
* Case-sensitive.
* Avoids / and null character in names.

**3. File Systems**

* **Windows:**
* **Common: NTFS (New Technology File System)**
* **Older/external devices: FAT32 and exFAT**
* **macOS:**
* **Default: APFS (Apple File System)**
* **Also supports HFS+ and FAT32 for compatibility**
* **Linux:**
* **Default: ext4 (Fourth Extended File System)**
* **Can mount FAT32 for USB/external devices**
* **FAT Usage**:
  + FAT stands for File Allocation Table
  + Still used in USB flash drives, SD cards for compatibility with all OSes.

**KT1902: Executable File Extensions**

**1. Executable File Types**

* **Windows**: .exe, .bat, .msi, .cmd.
* **macOS**: No extension needed. Apps are .app bundles.
* **Linux**: No extension needed. Permissions define executability.

**2. Script Execution**

* **Windows**:
  + Uses .bat for batch scripts.
  + PowerShell scripts: .ps1.
  + Run via PowerShell or CMD.
* **macOS**:
  + Shell scripts with .sh or no extension.
  + Run via Terminal using bash, zsh, etc.
* **Linux**:
  + Shell scripts (.sh, .bash, .py, etc.).
  + Run via Terminal or assigned execution permission (chmod +x).