Assignment

In this assignment, you will configure the disk on a machine to have many partitions and create many different filesystems with various configurations. Finally, you will explore the data and file storing properties of the different file systems and configurations.

Create partitions

You should create the following partitions:

- 10 X 50MiB

Create file systems

Create file systems on the 10 50MiB partitions as described below. All filesystems should be configured with the 'type' of `Linux` in cfdisk. You should make a note of each mkfs command that you use.

- EXT4 file system with block size 1024 and no reserved blocks.
- EXT4 file system with block size 1024, no reserved blocks and 1024 bytes per inode.
- EXT4 file system with block size 4096 and no reserved blocks.
- EXT4 file system with block size 4096, no reserved blocks and 128 inodes.
- VFAT file system with FAT size of 32.
- VFAT file system with FAT size of 32 and logical sector size of 512.
- VFAT file system with FAT size of 12 and logical sector size of 4096.
- NTFS file system with default configuration.
- NTFS file system with cluster size of 512.
- NTFS file system with cluster size of 65536.

Mount file systems

Create a directory named `/space`. Inside this directory, create 10 directories to mount the directories listed above.

These 10 directories will be the mount points for the 10 file systems created in the previous section.

Put entries in `/etc/fstab` for these all of these file systems to be mounted at boot time. Manually test the mounting and umounting of the file systems. Then reboot the machine to verify boot-time mounting.

Exercise the file systems

- Be sure that your file systems are all correctly mounted before proceeding.*
- Be sure NOT to run these tests in your root file system.*
- Before starting the tests, delete anything that may be in the directory (including lost+found).
- On your machine, download the file found here and extract somewhere. Eventually you need to move all the hog programs over to `/usr/local/bin`. (Hint: I would use `wget` to get the file, `tar -xvzf` to extract, and `sudo mv hog /usr/local/bin`)
- Using the `inodehog` program, find the largest number of files that can be created in each of the 10 file systems.