CS240 - Operating Systems
Assignment #6
Spring 2024

The purpose of this project is to understand the on-disk structure of a DOS floppy disk, and to write a program which can read files from such a disk.

A $3\frac{1}{2}$ floppy disk is organized in sectors - each sector is 512 bytes (actually, the sector size is specified in the boot block, but is always 512). For simplicity, MS-DOS considers that a disk block is the same size as a sector; therefore these two terms will be used interchangeably in the following discussion.

The root directory blocks, as well as subdirectory files, contain *directory entries*. Each entry is 32 bytes long, organized as shown on the next page.

Eight such directory entries will fit in each directory block. Subdirectories are "regular" files (i.e. allocated in the FAT like any other file) that contain directory entries in the same format.

The FAT contains 12-bit entries which specify the block numbers of the blocks that make up files. There are two FAT entries in each three bytes within the FAT blocks. The first two entries are unused; entry number two corresponds to the first block in the "data area" on the disk.

Many of the other details of the FAT file system are provided in the handout associated with this assignment.

Using the disk image `floppy1.img` as input, you are to write a program that will:

- Print out the names of the files in the root directory, including the subdirectory names and any deleted files (Note that the first character of a deleted file name will have been replaced), in a form similar to that of a dos disk. For each entry, print out the file name and extension, the time and date of the file, the file size, and the starting cluster (block) number of the file.

- In one of the subdirectories, there is a file named `README` - print out the contents of this file.