Princeton University
COS 217: Introduction to Programming Systems
Linux File/Directory Permissions

Classes of File/Directory Users

Owner	A file/directory has an **owner**. A file/directory's **owner** is the user who created it. A file/directory's owner can issue `chmod` commands to change its permissions.
Group	A file/directory has a **group**. A group is a set of users. The owner of the file/directory can issue `chgrp` commands to change a file/directory's group to any other group of which the owner is a member.
Others	**Others** are everyone else!

File Permissions

Read	If a file has **read** permissions for its owner, its group, or others, then its owner, its group, or others can *examine* the contents of a file (via `cat`, `more`, `less`, `xxd`, `emacs`, etc.).
Write	If a file has **write** permissions for its owner, its group, or others, then its owner, its group, or others can *change* the contents of that file (via `emacs`, etc.).
Execute	If a file has **execute** permissions for its owner, its group, or others, then its owner, its group, or others can *execute* that file as a command. It makes sense to give a file execute permissions if and only if it contains executable code: executable binary code, a Bash shell script, a Python script, etc.

Directory Permissions

Think of a directory as a table containing file/directory names. Some common permission combinations:

`--x`	The directory's owner, group, or others can *search* the table. That is, they can `cd` to the directory, read from existing files/directory in the directory, and write to existing files/directories in that directory. But they cannot discover the names of the files/directories in the directory (via `ls`), cannot create new files/directories in the directory, and cannot delete existing files/directories from the directory.
`r-x`	In addition to `--x`… The directory's owner, group, or others can *read* the table. That is, they can discover the names of the files/directories in that directory (via `ls`).
`-wx`	In addition to `--x`… The directory's owner, group, or others can *write* to the table. That is, they can create new files/directories in the directory and can delete existing files/directories from the directory.
`rwx`	The directory's owner, group, or others can perform any operation on the table.