

Syscalls: Files 5: Filesystem Syscalls

1. Library vs. Syscall I/O
2. Basic I/O Syscalls (part a)
3. Basic I/O Syscalls (part b)
4. File Offset
5. **Filesystem Syscalls**

Filesystem System Calls

Create and open a file:

- `int creat(const char *pathname, mode_t mode)`

Delete file (remove name or hard link):

- `int unlink(const char *pathname)`
- `int remove(const char *pathname)`

Rename and maybe move a file:

- `int rename(const char *oldpath, const char *newpath)`

Truncate (zero out) a file:

- `int truncate(const char *path, off_t length)`
- `int ftruncate(int fd, off_t length)`

Filesystem System Calls (contd.)

Create a new hard or soft link:

- `int link(const char *oldpath, const char *newpath)`
- `int symlink(const char *oldpath, const char *newpath)`

Read a symbolic link:

- `ssize_t readlink(const char *path, char *buf, size_t bufsiz)`

Get detailed file metadata:

- `int stat(const char *path, struct stat *buf)`
- `int fstat(int fd, struct stat *buf)`
- `int lstat(const char *path, struct stat *buf)`

Filesystem System Calls (contd.)

Change file mode/permissions:

- `int chmod(const char *path, mode_t mode)`
- `int fchmod(int fd, mode_t mode)`

Change file owner and group:

- `int chown(const char *path, uid_t owner, gid_t group)`
- `int fchown(int fd, uid_t owner, gid_t group)`
- `int lchown(const char *path, uid_t owner, gid_t group)`

Check whether process can access file as specified:

- `int access(const char *pathname, int mode)`

Filesystem System Calls (contd.)

Change file access and modification times (atime and mtime):

- `int utime(const char *filename, const struct utimbuf *times)`
- `int utimes(const char *filename, const struct timeval times[2])`

Misc. File System Calls

Two special/unique file syscalls are:

- `int fcntl(int fd, int cmd, ... /* arg */)`
- `int ioctl(int fd, int request, void *argptr)`

`fcntl()` can be used for various operations on open files, including changing *access mode* or other `open()` *flags*, *record locking*, managing *signals*.

`ioctl()` can be used for manipulating parameters of *devices* (open “*special files*”).