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Assignment 3

Readme

This program provides an interface that allows easy use of files across networks much like a file system call. With this we were able to make netopen, netread, and netwrite. Which behave similarly to open, close, read, and write. These calls open a connection to the file server. This file server is a separate program that runs on an iLab machine and not what the client code runs on. When a file command is run the library function opens a connection to the file and sends a message giving the instruction or the invoked function. With error, the file server's response and sets the errno locally.

Libnetfiles.c
int netserverinit(char * hostname)

Checks to see that the hostname is valid. It returns 0 on success and -1 on error and h_errno set correctly.

int netopen(const char * pathname, int flags)

Returns the file descriptor of the pathname specified. The argument flags, O_RDONLY, O_WRONLY, and O_RDWR, request opening the file read-only, write-only, or read/write.

Errors:

- HOST_NOT_FOUND – hostname not provided or not known
- EACCES – permission denied
- EINTR – interrupted function call
- EISDIT – is a directory
- ENOENT – no such file/directory
- EROFS – read only file system

ssize_t netread(int fileds, void * buf, size_t nbyte)

Read nbytes amount of bytes and returns bytes read.

Errors:

- ETIMEDOUT – connection timed out
- EBADF – bad file descriptor
- ECONNRESET – connection reset

ssize_t netwrite(int fileds, const void *buf, size_t nbyte)

Writes nbytes amount of bytes into the file. Otherwise the function returns -1 and set erno in the caller's context to indicate the error.

Errors:

- ETIMEDOUT
- EBADF
- ECONNRESET

int netclose(int fd)

Closes the file descriptor.

Errors:

- EBADF

Netfileserver.c
This sets up the basic metadata and sets up the socket. It calls accept in a while loop whenever it gets a connection request. Accept will return a new socket id. Then we create a thread (wthread() function) that is going to handle the connection, hand the socket to the thread and then go back to listening on the server.

Extension A:

Extension A provides a way to show read/write permissions. It creates the structs based on the number of clients. If an error comes up, then errno is set to 1, so it cannot be finished and open returns -1. If the file still has RDWR access then it fulfills all requests.