Operating Systems CO-562

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Assignment 1

Problem 1.1

Passing memory address to pointer is not good thing to do. There is high risk in creating local variable, deleting it after the function ends and then trying to return its memory address. In other words, the memory address is either valid or not and it results some potential memory issues.

Problem 1.2

(a)

int open(const char *path, int oflag, ...) can fail when
– search permission in one of the directories in path are denied
– request to access the file does NOT exist

int close(int fildes) fails when
– fildes get interrupted by the signal
– fildes is invalid file descriptor

(b)

The errno takes value -1 or NULL when return value of the system call or library function indicates error. However, for some system calls and library functions -1 can be returned as success. In that case, we distinguish successful return from error by setting it zero before the call, and then we call return indicates status of possible error, we check whether errno has nonzero value.

Problem 1.3

(a)

The code is attached.

(b)

I observed that it takes more time for system call rather than library. Since system call is changing to system mode and back every character, it spends time in system mode, whereas library function does not go there at all.

(c)

Please see code attached.

If I make top fastest call, Linux specific call is faster than system call, but still works slower than library function. Since the buffer size was increased in library function Linux specific system call works faster than read/write system call.