Student:

Operating Systems
Jacobs University Bremen
Dr. Jürgen Schönwälder

Course: CO20-320202
Date: 2019-09-16
Time: 10 min.

OS 2019 Quiz Sheet #1

Problem 1.1: *system call failures* (1+1 = 2 points)

System call errors are usually indicated by returning a special value (typically -1) and by indicating the details in the global variable `int errno`, declared in `errno.h`. For each of the following system calls, give a condition that causes it to fail (i.e., a condition that causes -1 to be returned and sets `errno` to a distinct value).

a) `int open(const char *path, int oflag, ...)`

b) `int close(int fildes)`

Problem 1.2: *system calls versus library calls* (2+2 = 4 points)

a) To a programmer, a system call looks like any other call of a library function. Is it important that a programmer knows which library functions result in system calls? Explain.

b) As a C programmer, you have learned to use the standard I/O functions provided by the C library such as `fputs()` and `fgets()`. What is a benefit of using the C library I/O functions compared to I/O system calls like `write()` and `read()`? Is there a possible downside of using standard I/O functions of the C library?

Problem 1.3: *dynamically versus statically linked executables* (2+1+1 = 4 points)

a) What is a dynamically linked executable?

b) Name a benefit of dynamically linked executables?

c) What is a possible downside of dynamically linked executables?