

# Lab 1

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August 30, 2022

## 1 QUESTION 1

*What are the advantages and disadvantages of using the same system call interface for manipulating both files and devices?*

The advantages of using the same system call interface for manipulating both files and devices revolve around the ease of use for programmers when writing applications and programs that will run on the operating system. In other words, the system call interface provides a layer of abstraction on top of the system calls to prevent programmers from having to make every needed system call for a given problem and, instead, can invoke a call from the system call interface, which will in turn invoke numerous system calls to achieve what the programmer is looking to do. From the perspective of the operating system, this abstraction can be beneficial as it prevents users from attempting to run a series of system calls that may break the system.

On the other hand, the same system call interface can be detrimental to the operating system if the implementation of each of the "endpoints" of the interface are not fully optimized to maximize performance. Also, programmers who want to work at the system call level are restricted as the system call interface is a layer of protection to prevent programmers from working directly with the system calls.

## 2 QUESTION 2

*Would it be possible for the user to develop a new command interpreter using the system call interface provided by the operating system? How?*

Yes, it is possible for the user to develop a new command interpreter using the system call interface. For instance, as described in Section 2.2.1 - Command Interpreters, some command interpreters may contain the code to execute commands and others refer to a file for how to run a given command. If a given operating system is using the former method, one can use the system call interface to write a command interpreter to use the latter method by invoking system calls to read and execute files based on the command that was requested by the user.