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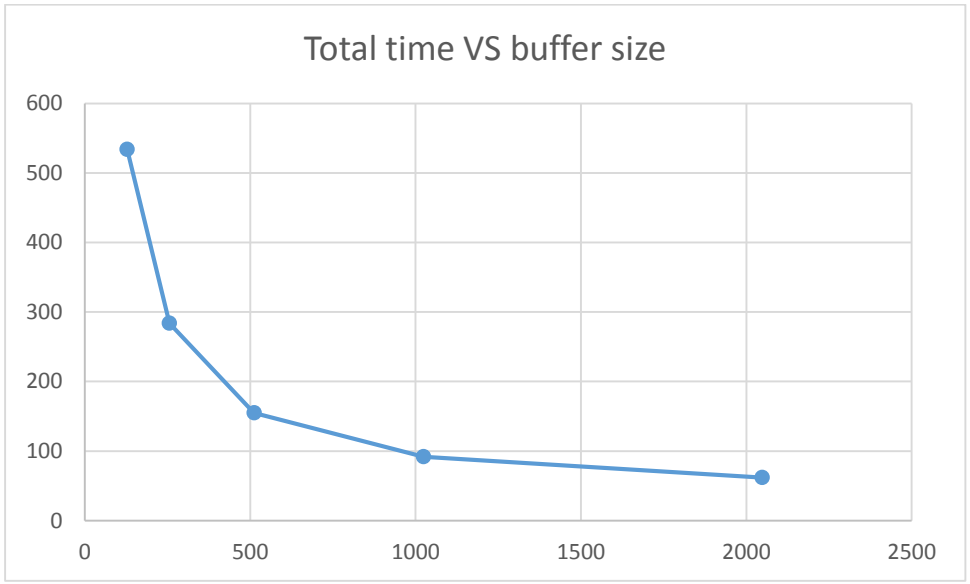
Part1:

The java file.

Part2:

1. 

2. The graph represents the relation between the total runtime of the program and the buffer size. The graph isn't linear because the larger the buffersize, fewer the system calls → and each call to a system call consumes time.
Larger buffer → Fewer calls → shorter running time.

3. Yes. Since print on the screen is also a system call, we will call ~5MB/buff times to system calls which make the program WAY slower.

Part 3:

1. **False**: Printing on the screen is a system call.
2. **False**: Keyboard press is an interrupt, not a system call.
3. **False**: Interrupts are sent from other devices to the CPU
4. **False**: System calls are the interface for applications to communicate with the OS kernel, and so accessing devices such as Hard Drive should be available for apps.
5. **False**: Web browser is running in user-mode, doesn't matter when its executable was installed. User can install programs that run in kernel-mode such as hardware drivers.

6. **False:** hardware interrupts are sent from devices to the CPU, not via the OS. The OS can decide to ignore the interrupt signals (which are sent by the CPU to the specific interrupt handler in the OS), but can't stop them from reaching the CPU.
7. **False**: The VM is a hardware-simulation, which relies on software infrastructure. It will never be faster than the real hardware and therefore the original OS will work faster than on VM.
8. **False:** The app can access the CD ROM functionality via the OS system calls while running in user-mode.
9. **False:** Each system call which is made causes the kernel to make a context switch which actually interferes the fluentness of the program.
10. **False:** System calls are used by applications to access hardware via the OS. External devices doesn't care who's the OS, they work against the CPU, on the BUS.