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Assignment 2

Section 2.1.5

1. The CPU also contains a high-frequency clock, a control unit, and an arithmetic logic unit.
2. The CPU is connected to the rest of the system using the data bus, control bus, and the address bus.
3. Memory access takes longer because it takes 4 steps to read a single value from it while cache memory uses static RAM so it is more easily available for the computer to read.
4. The 3 steps are known as fetch, decode, and execute.
5. The 2 extra steps are fetching the operand itself, which happens between decode and execute, and storing the result, the last step in the process.

Section 2.4.3

1. The 8259A deals with interrupts from hardware devices, like the keyboard, system clock, and disk drives, which make the CPU process their requests immediately.

Section 2.5.2

1. The application program is the most universal and portable because it has the least amount of requirements to function properly but also provides the least amount of control of the hardware being used by the computer and takes longest.
2. Not this one.
3. Device drivers are necessary because they allow for more than one program to be run at a time as they access hardware in a carefully controlled manner.
4. The BIOS function is the best function for communicating between the OS and the system hardware.
5. Yes, the outcomes would be different for each operating system even if the BIOS system was the same. The programmer would have to specially program the BIOS for it to produce the same result on another OS.

Section 2.8

7. In the CPU the floating-point unit (FPU) would handle the floating point arithmetic.

8. There are 8 bits in each 32 bit data register.

9. True

10. True

12. False

19. False

20. False

25. Any level because programs can directly access input-output .

26. To execute the command as quickly as the hardware will permit.