2.1.5 Section Review, Questions 1,2,3,4 and 5

1. Apart from registers, the CPU also contains a clock, a control unit (CU), and an arithmetic logic unit (ALU). The clock synchronizes the operations of the CPU with other system components. The CU allows the CPU to execute instructions in sequential steps. The ALU does arithmetic functions (addition & subtraction) and logical operations (AND, OR, NOT).
2. The CPU is connected to the data bus, control bus, and address bus.
3. Memory access takes more machine cycles than register access because reading a single value from memory requires 4 steps, each step requiring a single clock cycle for a total of four clock cycles. First, the address of a value would be read on the address bus. Second, the value of the processor’s read pin is changed. Third, the processor waits one clock cycle for the memory chips to respond. Lastly, the data is copied from the data bus to the destination operand.
4. The three basic steps in the instruction execution cycle are fetch, decode and execute.
5. It fetches then stores the operands.

2.4.3 Section Review, Question 5

1. The 8259A Programmable Interrupt Controller’s purpose is to handle external interrupts from hardware devices (keyboard, system clock, disk drives), which can interrupt the CPU to make it process their requests immediately.

2.5.2 Section Review, Questions 1, 3, 4, and 5

* + - 1. Application Program level (Level 3)

1. Devices which add new functionality are invented which surpass what BIOS supports.
2. The BIOS function level (Level 1)
3. The BIOS for a computer running Windows would likely be the same as a computer running Linux. A single computer with its own BIOS can handle multiple different operating systems.
   1. Review Question 7, 8, 9, 10, 12, 19, 20, 25, and 26
4. The floating-point unit (FPU).
5. There are 80 bits.
6. True
7. False
8. False

19. False

20. False

25. At the Library level (Level 3), OS function level (Level 2), BIOS function level (Level 1), and Hardware level (Level 0).

26. They often do because game programs usually try to take advantage of special features specific to each sound card. There is also the benefit of being able to execute as quickly as the hardware will permit, something which is important in an intensive process like a game.