**Week 3 – Homework Problems**

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**Chapter 4  
Exercise 4.1.1**

When the computer sees the AND instruction, it needs to know what to do. It gets this information from signals that act like commands. For the AND instruction you mentioned, here’s what the computer is told through these signals:

**1.** **ALU Operation**: This tells the computer's calculator part to do an AND operation.

**2.** **Register Destination**: This says to save the result in the register meant for results.

**3.** **ALU Source**: This tells the computer that both numbers to AND are coming from registers (small storage areas in the CPU).

**4.** **Register Write**: This signal says "yes" to save the result into the register storage.

**5.** **Memory Read**: This is off because we are not getting anything from the computer's main memory.

**6.** **Memory Write**: This is also off because we're not putting anything into the main memory.

**7.** **Branch**: This is off because we're not making any decisions to go to different parts of the program.

**8.** **Memory to Register**: This is off because we're not moving information from memory to a register.

These are like simple yes or no signals that guide the computer to perform the AND instruction correctly.