

Step 2: Write Down What You Just Did

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For this step, you must think about what you did to solve the problem, and write down the steps to solve *that particular instance*. Another way to think about this step, is to write down a clear set of instructions that anyone else could follow to reproduce your answer for the particular problem instance that you just solved. If you do multiple instances in Step 1, you will repeat Step 2 multiple times as well, once for each instance you did in Step 1. If an instruction is somewhat complex, that is all right, as long as the instruction has a clear meaning—later, we will turn these complex steps into their own programming problems, which will get solved separately.

The difficult part of Step 2 is thinking about *exactly* what you did to accomplish the problem. The difficulty here is that it is very easy to mentally gloss over small details, "easy" steps, or things that you do implicitly. This difficulty is best illustrated by the peanut butter and jelly exercise we mentioned earlier. Implicit assumptions about what to do, or relying on common sense lead to imprecise or omitted steps. The computer will not fill in any steps you omit, thus you must be careful to think through all the details.

Returning to our example of computing x to the y , we might write down the following steps for $x = 3$ and $y = 4$:

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Multiply 3 by 3
  You get 9
Multiply 3 by 9
  You get 27
Multiply 3 by 27
  You get 81
81 is your answer.
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The steps are very precise—and leave nothing to guess work. Anyone who can perform basic arithmetic can follow these steps to get the right answer. Computers are very good at arithmetic, so none of these steps is even complex enough to require splitting into a sub-problem.