Algorithms and Sequence

This week you'll learn how to create your very first computer program. But first, some questions. Have you ever given someone directions to go from one location to another? Or have you ever taught a friend how to carry out a task? For instance, how to tie their shoelaces. Or have you ever followed a recipe? For example, to bake a cake. If your answer to any of these questions, or to similar questions, yes, then you're already familiar with programming. You just haven't realized.

Let's start by exploring different examples from everyday life. These examples will show you the fundamental concepts of programming. Let's say we want to teach someone how to make a sandwich. We can describe the steps as take two slices of bread, place a slice of ham over one slice of bread, place a slice of cheese over the ham, place a second slice of bread on top of the cheese, and that's it. So if we were to write down the different steps in English, that's what it would look like.

You can see that we described this process as a sequence of steps, which are followed in order, one after the other. Let's look at another example. We want to describe how to change a light bulb. We could do the following. If you don't have a new light bulb, buy a new one. Turn off the power. Repeat, twisting the light bulb counter clockwise until you remove it. Throw out the burned light bulb. Place the new light bulb into the socket. Repeat, turning the lightbulb clockwise until it is tight. Turn the power on. And this is what this process would look like when writing it down. Here we have a sequence of ordered steps which also include a decision and a repetition.

Sequence, decisions, and repetitions are basic constructs with which we build our programs.We described the process for making a sandwich and changing a lightbulb as a step by step procedure. This ordered sequence of steps is called an algorithm. Algorithms describe the procedure for carrying out a task or solving a problem in a step-by-step fashion. They may include sequences, decisions, and iterations, just like we saw with the two previous examples.

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