

# Programming a Dishwasher

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A number of years ago, in my mainframe computer days, someone came up to me at my desk, and asked if I could spare a minute. It was Helen, our tape librarian. She had the essentially clerical job of keeping track of the literally thousands of computer tapes our shop had, bringing them from the tape vault when the computer needed them, and filing them away afterwards. It was neither a high paying nor prestigious job.

Helen wanted to improve her lot. Well good for her! So she was taking an evening course in programming at a community college, hoping to be hired as a junior programmer. But she was having problems with her homework, so she came to me for help.

But after listening to her try to explain her assignment, I quickly realized that the problem wasn't with the homework. It was with her. She really had no idea what she was doing. Now Helen wasn't stupid or lazy. She just hadn't got the fundamental idea of what was going on. So she was flailing in the dark, and it was no surprise she was having trouble with the course.

So I ignored her explicit homework problem. Instead I talked to her about programming in general. I explained that programming involved writing up a series of instructions for someone (usually, but not necessarily, a computer) to perform a task. I gave writing up recipes as an example. I also offered a couple of other ideas. I then told her to go home that night, choose one of my examples, and play a game with her husband.

The game was this. She would write down on a piece of paper, a set of explicit actions to be performed by her husband. She chose washing dishes (see Note below). She would then hand the instructions to him, and at that point she was done. No going back and editing the "program". Her job was to make the instructions perfect, resulting in clean dishes. His job was, without getting silly about it, to look for errors, ambiguities, assumptions, etc in her instructions, and wind up with the dishes *not* done.

She came back the next day, beaming. They had tried it, and as she watched him go through her instructions, it quickly became clear that there was a problem. Although she had written for him to run the water in the sink, she had forgotten to specify that the drain be plugged first. So instead of getting a sink full of soapy water, he had an empty basin.

She said that that that point the penny dropped, and she saw the relationship between the instructions on the paper (the program), the actions that resulted from them (the calculations / actions that the computer would do), and how imperfect instructions lead to unexpected results (program bugs).

I wound up leaving the company shortly thereafter, and I never did find out if Helen finished her course and got her programming job. But I'd like to think that she did.

Note: Helen chose her "program" wisely. A chance to get her husband to do the dishes? No fool she!

There's a small follow-on to this. I mentioned this story to another person I worked with, who also had an essentially clerical job. While she wasn't interested in becoming a programmer, she thought the "game" sounded like fun, and asked for suggestions. Knowing that she was going away camping that weekend with friends, I suggested the task of frying eggs.

Writing foolproof directions to fry eggs isn't easy. To give just a few of the possible examples...

- When you crack open the egg to put it into the pan, make sure that your instructions get just the egg (all of it), but no pieces of shell.
- And if you don't say to crack open the egg close to the pan, someone could thwart your goal of fried eggs by dropping them from a height. You might wind up frying a mess, but you sure wouldn't wind up with a circular yolk surrounded by a halo of white.
- Did you remember to put the pan over the fire? And was the fire already lit?
- How do you tell if it's done? Wait a specific number of minutes? Or eyeball it, looking for specific visual clues that it's done? Or something else.
- Are the eggs to be sunny-side up or sunny-side down? If the latter, good luck specifying clearly how to flip them.
- When the eggs are ready, make sure you take them out of the frying pan and onto a plate. Otherwise you'll have to eat them from the super-hot pan.

And so on. You might have fun coming up with other problems.

She later said that they went through almost two dozen eggs, and made quite the mess, but had a riot doing it!