The Importance of (Variable) Names

Writing 'readable' code is vital to the long-term usability of the code. Code that is clearly written is easy to understand (both for the original programmer and for future users), easier to maintain, and easier to check for mistakes. One important aspect of readable code is the use of clear, meaningful variable names. Using meaningful variable names can greatly improve the understandability of code.

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BY THE TIME PRINCESS Ann reached the northernmost outpost within the kingdom, she was losing hope. Her father, King Fredrick, had sent her on a quest to save the kingdom from impending darkness weeks ago. So far, Ann had found nothing.

The outpost of Garroow had been hit particularly hard by the chaos. The frequency of goblin attacks had increased in recent weeks. The commander, Sir Aat, had sent word to Ann's father that the outpost desperately needed reinforcements. At a loss for better stops on her quest, Princess Ann headed north to Garroow. While there she also hoped to consult with the world's second-most expert in loops, Dr. Whileton.

Ann found the situation in Garroow worse than she had expected. First off, Dr. Whileton had left for Guelph to start an "important collaboration" with another loop scholar. Nobody could provide details on the project or the timing of his return. Second, and perhaps more importantly, the outpost itself teetered on the verge of collapse.

During her first night at the outpost, a small goblin attack almost overwhelmed it. The fifty-person garrison barely held off three relatively tired goblins. She heard the captain shouting orders at his soldiers:

"Ut, guard the south wall. No, I meant Ot. Ut, stay where you are.

"Drex—no, I mean Dex—swap places with Plex. We need an archer on the wall, not a blacksmith.

"Et, secure that door."

Eventually, the soldiers repelled the attack and put out the fires. However, the lingering feeling of chaos and confusion continued to bother Ann. It worried her that the garrison's response had been so disorganized. It was like watching her father's turtle Fido try to chase its own tail. The problem wasn't the number of soldiers in Garroow, but rather how they were being commanded.

Ann resolved to fix the situation before leaving the garrison. She spent the entire night pondering the different algorithmic strategies, certain that one of them would help the garrison run more efficiently. As she had been taught from an early age, almost every problem has an algorithmic solution. Ultimately, the true problem dawned on her at 3 a.m., and she fell asleep confident that she knew how to fix the situation.

"Sir Aat," she addressed the commander at breakfast the next morning. "We need to discuss the attack last night."

"Yes," agreed the commander. "The goblin threat is real. Now you see why we need the reinforcements?"

"No," responded Ann.

The commander looked shocked. The rest of the dining hall fell silent. Everyone waited to see what Ann would say next.

"You need better names," Ann continued.

The commander laughed deeply. "You don't understand. We've already improved our names. When a soldier joins the outpost, I assign him a new name. Every name is short so that commanders can call out orders quickly in battle."

"No," disagreed Ann. "It's inefficient."

"No offense, Princess Ann, but what do you know about commanding in battle?" he asked.

"Only what I observed last night. But from that limited introduction, I can assure you that the names are hurting your efforts."

"I think you're mistaken," declared the commander. "They allow us to issue commands at incredible speeds."

"Yes, they do," agreed Ann. "But they're prone to mistakes. Last night, you corrected yourself 89 different times. The names are too similar and thus too easy to confuse. Plex and Dex. Ut, Ot, Et, and Aat. The short names don't help!"

"Ha! What would you suggest?" scoffed the commander.

"Use descriptive names. For example, Plex should be called 'South Tower Archer' or at least 'Archer Plex.' That more accurately reflects his role."

"That's crazy!" bellowed the commander as he slammed his mug of coffee on the table. His anger at being lectured overrode his manners toward the future ruler of the kingdom. "Do you know how long it takes to say 'South Tower Archer' in the heat of battle? We would waste valuable time."

"Do you know how long it takes to say 'Dex, swap places with Plex, we need an archer on the wall, not a blacksmith'? Any measure of efficiency needs to take into account the time spent on corrections," Ann countered.

"Well—you see—our old blacksmith Drex recently relocated, so—" started the commander.

"What about you?" Ann interrupted. "Why not have them call you 'Commander' or 'Captain'?"

"Our names already reflect rank," replied the commander. "The names proceed down the ranks in alphabetical order. It allows any soldier to instantly know who outranks them! It makes life simple!"

"No it doesn't. In order for the soldiers to refer to each other, they have to learn new, made-up names. Why not have them learn the ranks instead? Either way they have to learn something new. Only, in this case, the ranks mean something."

"We have a good system!" argued the commander.

Ann sighed. "It's like programming a complex algorithm," she explained. "Using short variable names can make it feel more efficient to program, because you can type out the code faster. But, in the long run, it can do more harm than good. It becomes easy to make mistakes and difficult to sort out what's happening. Oftentimes, slightly longer names can make a significant difference."

The commander opened his mouth to argue but couldn't think of a rebuttal. Instead, he sat at his table, mouth open, with a confused look on his face. After a while, he spoke.

"Princess Ann, I think you might have a point." Secretly, the commander also felt a small pang of relief. He had never been fond of his own assigned name. He often found himself daydreaming of his soldiers saluting and shouting "Yes, Commander!" in unison.

That afternoon, the commander changed every soldier's name to be longer but more meaningful. Over the next few days, the troops stumbled through drills, getting used to their longer names. But soon Ann began to see efficiency improve.

A week later, on Ann's final night in Garroow, goblins attacked again. This time the invading force consisted of ten highly trained goblin special-forces troops. The Garroow soldiers turned away the attack with ease.

As Ann left the garrison, she took a small bit of pride in the dramatic improvements in the forces there. After indulging in the brief moment of happiness, she turned her horse south and continued on her quest to save the kingdom.