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Cold-blooded software (https://dubroy.com/blog/cold-blooded-software)

December 28, 2023

It’s 2004 and I’m sitting in one of the largest lecture halls at my university. I’m a computer science major but I’m taking a course on natural history — plants and animals — as one of my electives.

The professor tells us that he’s brought something from home, something he found in his freezer. He reaches down behind his desk, and then holds his arm out to show us what’s sitting in his palm: a baby painted turtle. We’re learning about cold-blooded animals, and it turns out that painted turtle hatchlings are pretty special — they’re one of only a few species that can survive being frozen.

Now, the lecture hall is pretty modern for 2004: there’s an overhead camera at the podium, where the professor can write notes that are displayed on screens around the hall. But instead of writing notes, he puts the turtle under the camera and starts his lecture.

Over the next hour, we watch this little reptile slowly come to life as the professor lectures. The first movements were nearly imperceptible. An eyelid cracking open, a leg inching forward. By the end of the lecture, the turtle has moved about halfway across our screens.

I’ll never forget that class, because it’s where I really understood what it means for an animal to be cold blooded. You see, warm-blooded animals — like humans or mice — have a stable body temperature that stays within a pretty narrow range. For humans, it’s around 37 degrees Celsius. A few degrees higher or lower and we’re in big trouble. Cold-blooded animals like the painted turtle can adapt their metabolism to the temperature around them. They’re active when it’s warm out, and as the environment (and their bodies) get cooler, they move more slowly. Very few of them can survive being frozen like the baby painted turtle can.

I see a similar dichotomy with software projects. Certain technology decisions lead to projects that are warm-blooded: everything is great when there’s constant motion on the project, generating heat. But put warm-blooded software in the freezer, and you’ll pull out a corpse six months later.

Maybe your CI isn't working because one of the services you depend on got bought or ran out of money. You add a new dependency and find yourself needing to upgrade your compiler. Another package you depend on is deprecated, and doesn't work with the latest version of the compiler.

Some projects are different. You work alone, make some changes when you're inspired, and then don't touch it again for another year, or two, or three. You can't run something like that as a warm-blooded project. There's not enough activity to keep the temperature up.

A cold-blooded project is like the baby painted turtle. You can freeze it for a year and then pick it back up right where you left off.

A cold-blooded project uses boring technology (https://mcfunley.com/choose-boring-technology). The build and test scripts don't depend on external services that might change, break, or disappear entirely. It uses vendored dependencies (https://go.dev/ref/mod#vendoring).

The software that powers this blog is cold-blooded. The first commit was nearly twelve years ago — a simple little static site generator to replace my out-of-date Wordpress installation:

```
commit 68949229ad426c1e8795ee640808db9987ab30ab
Author: Patrick Dubroy <pdubroy@gmail.com>
Date:   Sun Jan 8 19:10:24 2012 +0100

    Add templates and site-building script.
```

It's written in Python (2, not 3). It depends on four third-party modules, and they're all committed to the project repository. Everything runs locally, and I deploy the result with rsync over ssh.

And boy am I glad I decided to do it that way. I've made a few small improvements over the years, but otherwise it's continued to work without modification. And I fully expect that it will still be working in another twelve years.

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👉 *You might also want to check out the discussion on Hacker News (https://news.ycombinator.com/item?id=38793206).*

Thanks to Thorsten Ball for helpful suggestions on this post.

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