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First Principle

Before we get started with Java / Data Structures, I always like to go through what I call **the first principle**. Essentially, these is a principle that I have found useful in explaining the philosophy behind almost all of what you do as a coder. In fact, it explains almost all of what you do in engineering. Here we go.

Lazy Is Good

Being lazy is good. A good engineer is a lazy engineer. A good coder is a lazy coder. By extension, a good data structures student is a lazy data structures student.

You must be wondering: *how can being lazy be good? After all, staying in bed instead of going to Daniel / Paul's lecture is certainly bad right? Why is this crappy TA telling me that skipping class is good? Daniel / Paul should fire him!*

You misunderstand. That's not being lazy. That's slacking. Think about it this way: if you skip a class, you'll have to make up for it by reading notes, reading textbooks, and eventually spending more time on this than attending a single class. In fact, you almost always spend more time. Then, **you're not being lazy in the long run**. In fact, you're committing harakiri to your future self.

Instead, **good engineers are consistently lazy**. Let's see how so.

Why Do We Engineer? So That We Can Be Lazy

We invented the telephone so that we don't have to carry messages by running and scream on the top of mountains. We invented the car so that we don't have to walk or clean horse dung. We invented the plane so that we don't have to spend 3 months on the sea. Every good engineering result is so that we and our offsprings can be lazy till the end of time. Really. Think about it.

Why Do We Code? So That We Can Be Lazy

Now let's focus on code. Why do we even code? Because it allows us to be lazy. In the short run, you may spend a little more time coding an email app, but in the long run, you save a ton of time by not resorting to snail mail. We may sacrifice a little time to build a GPS app, but it will save us every time we drive. This is the fundamental reason why we systemize anything. **We systemize so that we can be lazy**.

Why Do We Learn Data Structures? So That We Can Be Lazy

Now that you've taken 1004/1007 or some intro CS class, you may think: hey I know how to code already! Or perhaps you're the top selling developer on Apple Store who built an app that gets people to feed cats that appear sporadically. Congratulations!

However, without proper understanding of data structures, you'll find that your app will break when it scales up; add a million users and your app may very well crash. Or, you may find that you want to add another feature and having to do so in the most troublesome way ever. Data structures are a set of tools for you to systemize properly so that your code is efficient, scalable, and maintainable. **Data structures allows you to be lazy**.

In this course, we will also try and teach you certain good coding habits. These are essential as well. Think about this scenario: you start off as a programmer in a company and work as that for a few years. Then, when you want to move up towards a management position, you find that you need to hire a team to take over the maintenance of your code. That's all fine until the team screams at you for your crappy code and how incomprehensible it is. You are then forced to spend all your time coding with your team rather than managing. You're then stuck as a code monkey for eternity. That's bad. Instead, you want your code to be self-documenting and easy to read, essentially making life easy for others and allowing yourself to be lazy.

This argument also applies to why we use generics, object oriented programming etc.

Why Lazy?

For those who are not convinced that laziness is an end in itself, here's an answer. **Being lazy allows you to scale up.** I don't mean your app or your code. I mean you. It allows you to do more things. You only have 24 hours in a day. Minus sleep that's 12. (No I did not miscount).

If you're like me and you want to get as much done as possible, you want to do everything in the fastest way possible. In other words, for each of those tasks, you want to minimize the amount of time you spend doing useless stuff across a long horizon. That's being lazy.

Keep this in mind. You'll see this theme recurring over and over again as we encounter various bizarre features in Java / Data Structures. I will always remind you of the purpose of those features: to help you be as lazy as possible.