

A Dialogue on Distribution

Professor: *And thus we reach our final little piece in the world of operating systems: distributed systems. Since we can't cover much here, we'll sneak in a little intro here in the section on persistence, and focus mostly on distributed file systems. Hope that is OK!*

Student: *Sounds OK. But what is a distributed system exactly, oh glorious and all-knowing professor?*

Professor: *Well, I bet you know how this is going to go...*

Student: *There's a peach?*

Professor: *Exactly! But this time, it's far away from you, and may take some time to get the peach. And there are a lot of them! Even worse, sometimes a peach becomes rotten. But you want to make sure that when anybody bites into a peach, they will get a mouthful of deliciousness.*

Student: *This peach analogy is working less and less for me.*

Professor: *Come on! It's the last one, just go with it.*

Student: *Fine.*

Professor: *So anyhow, forget about the peaches. Building distributed systems is hard, because things fail all the time. Messages get lost, machines go down, disks corrupt data. It's like the whole world is working against you!*

Student: *But I use distributed systems all the time, right?*

Professor: *Yes! You do. And... ?*

Student: *Well, it seems like they mostly work. After all, when I send a search request to google, it usually comes back in a snap, with some great results! Same thing when I use facebook, or Amazon, and so forth.*

Professor: *Yes, it is amazing. And that's despite all of those failures taking place! Those companies build a huge amount of machinery into their systems so as to ensure that even though some machines have failed, the entire system stays up and running. They use a lot of techniques to do this: replication, retry, and various other tricks people have developed over time to detect and recover from failures.*

Student: *Sounds interesting. Time to learn something for real?*

Professor: *It does seem so. Let's get to work! But first things first ... (bites into peach he has been holding, which unfortunately is rotten)*