

A Dialogue on the Book

Professor: Welcome to this book! It's called *Operating Systems in Three Easy Pieces*, and I am here to teach you the things you need to know about operating systems. I am called "Professor"; who are you?

Student: Hi Professor! I am called "Student", as you might have guessed. And I am here and ready to learn!

Professor: Sounds good. Any questions?

Student: Sure! Why is it called "Three Easy Pieces"?

Professor: That's an easy one. Well, you see, there are these great lectures on *Physics* by Richard Feynman...

Student: Oh! The guy who wrote "Surely You're Joking, Mr. Feynman", right? Great book! Is this going to be hilarious like that book was?

Professor: Um... well, no. That book was great, and I'm glad you've read it. Hopefully this book is more like his notes on *Physics*. Some of the basics were summed up in a book called "Six Easy Pieces". He was talking about *Physics*; we're going to do *Three Easy Pieces* on the fine topic of *Operating Systems*. This is appropriate, as *Operating Systems* are about half as hard as *Physics*.

Student: Well, I liked physics, so that is probably good. What are those pieces?

Professor: They are the three key ideas we're going to learn about: **virtualization, concurrency, and persistence**. In learning about these ideas, we'll learn all about how an operating system works, including how it decides what program to run next on a CPU, how it handles memory overload in a virtual memory system, how virtual machine monitors work, how to manage information on disks, and even a little about how to build a distributed system that works when parts have failed. That sort of stuff.

Student: I have no idea what you're talking about, really.

Professor: Good! That means you are in the right class.

Student: I have another question: what's the best way to learn this stuff?

Professor: Excellent query! Well, each person needs to figure this out on their

own, of course, but here is what I would do: go to class, to hear the professor introduce the material. Then, at the end of every week, read these notes, to help the ideas sink into your head a bit better. Of course, some time later (hint: before the exam!), read the notes again to firm up your knowledge. Of course, your professor will no doubt assign some homeworks and projects, so you should do those; in particular, doing projects where you write real code to solve real problems is the best way to put the ideas within these notes into action. As Confucius said...

Student: Oh, I know! *I hear and I forget. I see and I remember. I do and I understand.*¹ Or something like that.

Professor: (surprised) How did you know what I was going to say?!

Student: It seemed to follow. Also, I am a big fan of Confucius, and an even bigger fan of Xunzi, who actually is a better source for this quote¹.

Professor: (stunned) Well, I think we are going to get along just fine! Just fine indeed.

Student: Professor – just one more question, if I may. What are these dialogues for? I mean, isn't this just supposed to be a book? Why not present the material directly?

Professor: Ah, good question, good question! Well, I think it is sometimes useful to pull yourself outside of a narrative and think a bit; these dialogues are those times. So you and I are going to work together to make sense of all of these pretty complex ideas. Are you up for it?

Student: So we have to think? Well, I'm up for that. I mean, what else do I have to do anyhow? It's not like I have much of a life outside of this book.

Professor: Me neither, sadly. So let's get to work!

¹ According to this website (http://www.barrypopik.com/index.php/new_york_city/entry/tell_me_and_i_forget_teach_me_and_i_may_remember_involve_me_and_i_will_lear/), Confucian philosopher Xunzi said "Not having heard something is not as good as having heard it; having heard it is not as good as having seen it; having seen it is not as good as knowing it; knowing it is not as good as putting it into practice." Later on, the wisdom got attached to Confucius for some reason. Thanks to Jiao Dong (Rutgers) for telling us!