USB: The Universal Serial Bus (FYSOS: Operating System Design Book 8)

USB: The Universal Serial Bus

Benjamin David Lunt

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Learn to program the four major USB controllers, UHCI, OHCI, EHCI, and the new xHCI, and communicate with devices attached to their root hubs, without operating system intervention. This book teaches you how to communicate with the bare hardware to request the device descriptors and then send and received data from various USB devices including USB external Hubs.

I bought and read the kindle edition of this book. It initially explains the PCI interface for usb host and continues with the 4 distinct usb controllers. It actually explains every aspect that you should know to write the usb driver from scratch without any os dependencies. Actually, If you write usb device driver of Windows or Linux etc. You should refer to the specific information regarding usb driver heirarchy which your target OS provides. But this book tells the basics of the USB driver from scratch. Must read for the reader who eager to learn basics of USB device driver fundamentals.

This book was exactly what I was looking for. Excellent detail about all topics covered, and makes
Ben Lunt shares his enthusiasm for USB in this book, his website, and his blog. If you want to mess around with building USB hardware or writing software that drives USB devices, this book is a good starting place as well as ongoing reference. I feel bad for the author that one of the reviews above gives him one star because it’s not for beginners. You’d think that would be obvious given the title. Even so, it does provide some very nice history about USB, along with details of versions 1, 2 and 3.0 of the USB standard. My main complaint is the Windows-centricity of the example code, but if you can’t get over that and you run Linux or MacOS, this book is probably not for you anyway. Another bit of feedback is that the Kindle version’s formatting, especially in the tables and code examples, is a bit awkward at best, and in a couple places looses information (I recommend shrinking the font quite small). Rounding up from 4.5 stars.

This book really does what it promises (“communicate with the USB, with no Operating System to get in the way”). First it introduces you to how to detect the controllers (UHCI, OHCI, EHCI, xHCI) on the PCI bus, then it describes the stacks. It continues with device enumeration, how to use HID devices, Mass Storage Devices, not to mention the other things. The CD-image need to be requested from the author which I got in less than a day from him. This book will definitely speed up the OS development. I am an experienced assembly and C programmer, though. As the book states in the Introduction, some knowledge of C and assembly is necessary (“You may also need to have a fair knowledge of C and Intel x86 assembly to use and understand the source code.”). 5 stars. Robert, Hungary, Europe

This is by far the best book I have read on USB, perfect for anyone interested in low level driver development without a reliance on any particular target OS. The working source code examples were clear and easy to understand, perfect for testing and experimenting with the USB hardware and devices.

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