

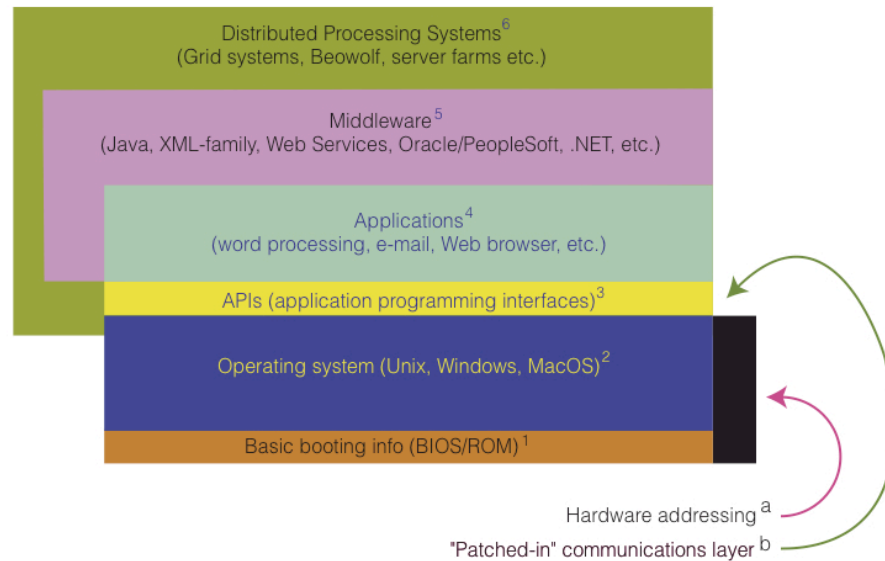
Unless otherwise noted, the content of this course material is licensed under a Creative Commons Attribution – Share Alike 3.0 license.
<http://creativecommons.org/licenses/by-sa/3.0/>

© 2009, Robert Frost

You assume all responsibility for use and potential liability associated with any use of the material. Material contains copyrighted content, used in accordance with U.S. law. Copyright holders of content included in this material should contact open.michigan@umich.edu with any questions, corrections, or clarifications regarding the use of content. The Regents of the University of Michigan do not license the use of third party content posted to this site unless such a license is specifically granted in connection with particular content. Users of content are responsible for their compliance with applicable law. Mention of specific products in this material solely represents the opinion of the speaker and does not represent an endorsement by the University of Michigan. For more information about how to cite these materials visit <http://open.umich.edu/education/about/terms-of-use>.

Any medical information in this material is intended to inform and educate and is not a tool for self-diagnosis or a replacement for medical evaluation, advice, diagnosis or treatment by a healthcare professional. You should speak to your physician or make an appointment to be seen if you have questions or concerns about this information or your medical condition. Viewer discretion is advised: Material may contain medical images that may be disturbing to some viewers.

Basic Architecture of a Modern Computer/Network: Abstraction Layers



¹When the machine powers up, tells central processing unit (CPU) to check memory, etc. and where to go to find how to "boot up"

^aThe very basic interface between hardware and software—where the computer "converses" with all peripheral devices, as well as hard drives, video/sound cards, etc.

²Controls access to almost all reads (sensing the keyboard, disk drive, memory, or other inputs), writes (to memory, printer, screen, speakers) through the CPU, which actually processes the data stream. Also includes filing system, e.g. where you locate your documents (from papers to music and images), applications, and the like.

^bFor Windows (up to 2000) and MacOS (up to 9.2), a patched, cobbled-in way of using Internet-standard communications protocols, such as TCP/IP and Ethernet (and its descendents). For Unix and its variants (such as MacOS X and Linux) communications are now embedded in the OS.

³[One hopes!] a set of knowable "sockets" into which data to and from applications can be fed, and through which a keystroke or other data input is handled by the OS and CPU. Can be open and publically known, but is often internal corporate, proprietary (and thus secret) information—a de facto set of "standards"

⁴The applications with which you're familiar, for example Netscape, Mulberry, Word, WinAmp, etc.—indeed, the operating environment in which you probably spend most of your time

⁵The applications and systems that allow communication and integration among separate machines (caveat: Unix does this implicitly) for high-level, often Net-based data-handling. In theory, these are independent of the specific hard- and software of any PC—they are "cross-platform."

⁶Networked processing, with the ability to hand-off processing tasks to any CPU able to perform the tasks requested. Potentially a very rich level, where individual processors are able to negotiate with others, and perhaps develop their own practices of deference to each other.