Computer Architecture

Boot Loader : *Where is Assembly relevant in 2017?*

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I'm going to research the modern uses for assembly and where it is still used/required. I will focus on bootloaders, and create a simple bootloader in x86 assembly. I want to understand why assembly is necessary when creating a bootloader and in other applications.

Deliverables:

Minimum:

At a minimum, my bootloader in x86 assembly that runs in a processor emulator such as QEMU and Bochs. This bootloader should be detected correctly and print a single line of text. I will describe a few areas where assembly is still commonly used or required and why it is needed in these areas. I will also explain more in depth why my bootloader needs to use x86 assembly to work.

Planned:

My bootloader, in addition to meeting all of the minimum requirements, will bootloader will load an x86 operating system kernel. The kernel will be C/C++ and will just print a simple line of text. This would show how a bootloader would be used to boot an operating system. The point of the kernel is to show how the bootloader can be used to boot an operating system since the kernel is the central core of a computer operating system.

Stretch:

My bootloader would be a multi-bootloader and be able to detect multiple operating systems. The user would be able to select which operating system to load. I would have two simple kernels that each print a different line of text.

References:

1. https://www.qemu.org/
2. http://www.linfo.org/kernel.html
3. http://mikeos.sourceforge.net/write-your-own-os.html#firstos