

Computer Systems

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Introduction

- Course designed to play a dual role:
 - ensure every CS graduate has basic knowledge about computer systems
 - prepare students who want to specialize in Systems & Networking track
- Course adopts the perspective of a *programmer* using computer systems, rather than a *designer* of operating systems
- Also the perspective taken by Bryant & O'Hallaron in textbook

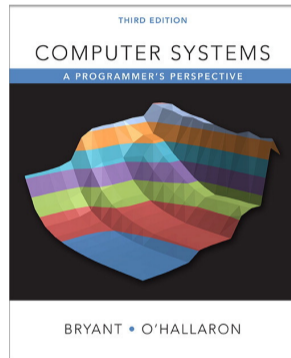
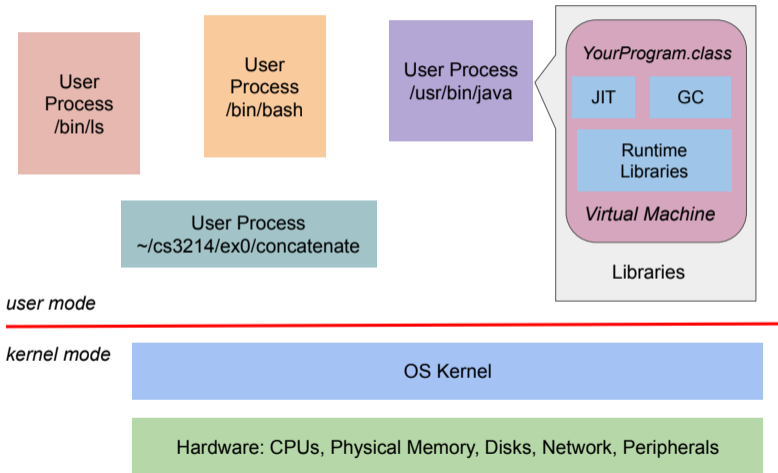


Figure 1: CSApp Book[1]

Typical System Architecture



Functions of a OS Kernel

- is a software layer that sits between applications and hardware
- abstracts hardware through interfaces
 - User processes make system calls, trapping into kernel to execute kernel code, return (like a library call)
- provides protection
 - via preemption (ability to take a resource away)
 - via interposition (e.g. indirection)
 - via privilege (user mode vs kernel mode)
- manages resources
 - via virtualization
 - via scheduling

- [1] Randal E. Bryant and David R. O'Hallaron.
Computer Systems: A Programmer's Perspective.
Pearson, 3rd edition, 2015.