Introduction to the Command Line Interface
A Tutorial On Using the Bash Shell

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Arizona State University
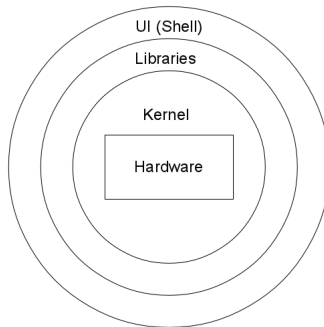
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What Is A Shell?

- In computing, a shell is *a user interface* for access to an operating system's services.
- Shells can be *graphical* or *text-based*.
- It is called a shell because it is the program on the outermost layer around the operating system kernel.
  - Applications are started using a command invoked through the shell.

A simplified, 3-layer layout of a common operating system

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Shells vs. Terminals

- Mid-60's and 70's: one *mainframe computer* shared by many users.
- Access the mainframe by one of many *teletype terminals* (*TTY*s), physical devices with a keyboard and screen hard-wired to the mainframe.
- TTYs would run a text-based shell to send commands to the mainframe.
- Nowadays, a *terminal emulator* (`gnome-terminal`, `xterm`, etc.) emulates a physical terminal, which runs a shell.

An original VT100 teletype terminal

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UNIX-Based Shells

- **Thompson Shell** (sh) | The first UNIX shell created by Ken Thompson
  - Introduced many basic features such as piping, simple control stuctures (if, goto, etc.), and filename wildcarding (*).
  - Traditionally located at /bin/sh on older UNIX systems.
- **Bourne Shell** (sh) | A rewrite of the Thompson shell with more features common to modern shells today.
  - Introduced more features such as here documents, command substitution, more generic variables and more extensive builtin control structures.
- **Bourne-Again Shell** (bash) | The GNU project's replacement of the Bourne Shell.

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