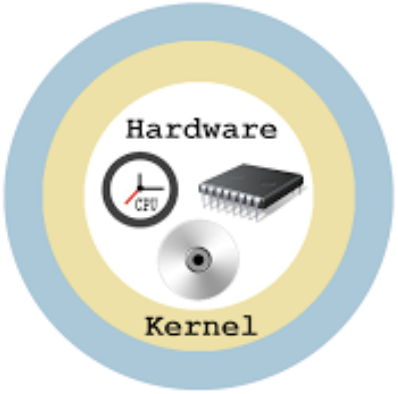
Chapter 1: Using the Shell

Three Main OS Components

- **Kernel** – manages the operation of the computer
- **Shell** – provides for interaction between the user and the computer
- **Filesystem** – provides a way to organize and manage all information on the computer's disk(s)

Role of the Kernel

- Main program loaded at startup that manages the operation of the computer
  - Manages devices, memory, and processes
  - Handles switching of applications
- Similar to an air traffic controller at an airport



The Shell

- The shell is a program that allows the user to type commands, options, and arguments
- Many shell programs exist
- Most popular shell is the “Bash” (Bourne Again Shell)
- A user’s shell can be changed by the `usermod` command by root
- User’s default shell stored in `/etc/passwd`

Accessing the Shell

- From a Graphical User Interface (GUI)
  - Open a terminal program
- From a Command Line Interface (CLI)
  - Provided automatically at login

What is a Command?

- A program executed on the command line
- Includes:
  - Built-in shell commands
  - Binary commands stored in files
  - Aliases
  - Functions
  - Scripts

Basic Command Syntax

- Syntax: command [options…] [arguments…]
- Commands, options, and arguments are all case sensitive

Specifying Options

- Short options are specified with a hyphen and a single character such as -a or -x
- Short options can be combined: -ax
- Long options are specified with a double hyphen and a “word”: --all
- Long options can not be combined
- Both short and long options can be used together

Specifying Options

- The option “--”, by itself, means “no more options”
- BSD*style options use no hyphen, just a single character: i.e. “a”

•*Berkely Standard Distribution (UNIX)

Specifying Arguments

- Arguments follow options
- Arguments are normally file or directory names
- Some commands require arguments
- Use single quotes around arguments if they contain special (non-alphanumeric) characters

The exec Command

- Takes another command name as an argument:

```
$exec ls
```

- Launches the other command which replaces the execution of the exec command
- Useful in wrapper scripts
- Also useful for redirection in scripts

The uname Command

- Displays useful system information:
  - `$uname -s` displays kernel name
  - `$uname -p` displays processor type
  - `$uname -i` displays hardware platform
  - `$uname -m` displays machine hardware arch.
  - `$uname -a` displays all information

The pwd Command

- Displays current working directory
  - `$pwd -L` displays logical location
  - `$pwd -P` displays physical location

Command Completion

- Saves time typing large command names
- Start by typing part of command name and then press the Tab key
- Will complete the rest of the command name if what has been typed so far is unique
- If not unique, press the tab key a second time.
- Also works to complete file and directory names when used as arguments