Inside Linux

- **Kernel**

  o The core of the UNIX system. Loaded at system start up (boot). Memory-resident control program.

  o Manages the entire resources of the system, presenting them to you and every other user as a coherent system. Provides service to user applications such as device management, process scheduling, etc.

  o Example functions performed by the kernel are:
    - Managing the machine's memory and allocating it to each process.
    - Scheduling the work done by the CPU so that the work of each user is carried out as efficiently as is possible.
    - Accomplishing the transfer of data from one part of the machine to another
    - Interpreting and executing instructions from the shell
    - Enforcing file access permissions

  o You do not need to know anything about the kernel in order to use a UNIX system. These details are provided for your information only.

- **Shell**

  o Whenever you login to a Unix system you are placed in a shell program. The shell's prompt is usually visible at the cursor's position on your screen. To get your work done, you enter commands at this prompt.

  o The shell is a command interpreter; it takes each command and passes it to the operating system kernel to be acted upon. It then displays the results of this operation on your screen.

  o Several shells are usually available on any UNIX system, each with its own strengths and weaknesses.

  o Different users may use different shells. Initially, your system adminstrator will supply a default shell, which can be overridden or changed. The most commonly available shells are:
    - Bourne shell (sh)
    - C shell (csh)
    - Korn shell (ksh)
    - TC Shell (tcsh)
    - Bourne Again Shell (bash)

- o Each shell also includes its own programming language. Command files, called "shell scripts" are used to accomplish a series of tasks.

- **Utilities**

  - o UNIX provides several hundred utility programs, often referred to as commands.
  - o Accomplish universal functions
    - ▪ editing
    - ▪ file maintenance
    - ▪ printing
    - ▪ sorting
    - ▪ programming support
    - ▪ online info etc.
  - o Modular: single functions can be grouped to perform more complex tasks