Inside Linux

- **Kernel**

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

    - 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**

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

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

- **Utilities**

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