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The Booting Process

The operating system follows a sequence of steps to run a computer and the process is called booting. As we see in this diagram, when a computer starts, first of all it needs to have an initial program to run. This initial program, or bootstrap program, is stored in read-only memory (ROM) or electrically erasable programmable read-only memory (EEPROM). These memories are called firmware and are embedded within the computer hardware. It utilises CPU registers, device controllers and sets the memory contents. To start executing the system, the bootstrap program must locate and load the operating system kernel, or core, into memory.

An operating system creates an environment by which multiprogramming can be accomplished. Multiprogramming is an essential feature of any operating system, where several programs are kept in the main memory at the same time, and the CPU can access these programs when needed. As a result, the CPU is always in an execution mode, maybe executing program A or perhaps program B, and then moving on to another program when a process is complete. The operating system begins to execute one program from memory, if this program needs to wait, either process A or process B and interrupts this process, the operating system then switches to another program without waiting. This is a real advantage as multiprogramming increases CPU utilisation.