LEC-6: What happens when you turn on your computer?

i. PC On
ii. CPU initializes itself and looks for a firmware program (BIOS) stored in BIOS Chip (Basic input-output system chip is a ROM chip found on mother board that allows to access & setup computer system at most basic level.)
    1. In modern PCs, CPU loads UEFI (Unified extensible firmware interface)
iii. Bios loads configuration settings.
iv. **CPU** runs the BIOS which tests and initializes system hardware. If something is not appropriate (like missing RAM) error is thrown and boot process is stopped.
    This is called **POST** (Power on self-test) process.
    (UEFI can do a lot more than just initialize hardware; it's really a tiny operating system. For example, Intel CPUs have the Intel Management Engine. This provides a variety of features, including powering Intel's Active Management Technology, which allows for remote management of business PCs.)
v. **BIOS** will handoff responsibility for booting your PC to your OS's bootloader.
    1. BIOS looked at the MBR (master boot record), a special boot sector at the beginning of a disk. The MBR contains code that loads the rest of the operating system, known as a "bootloader." The BIOS executes the bootloader, which takes it from there and begins booting the actual operating system—Windows or Linux, for example.
    In other words,
    the BIOS or UEFI examines a storage device on your system to look for a small program, either in the MBR or on an EFI system partition, and runs it.
vi. The bootloader is a small program that has the large task of booting the rest of the operating system. Windows uses a bootloader named Windows Boot Manager (Bootmgr.exe), most Linux systems use GRUB, and Macs use something called boot.efi