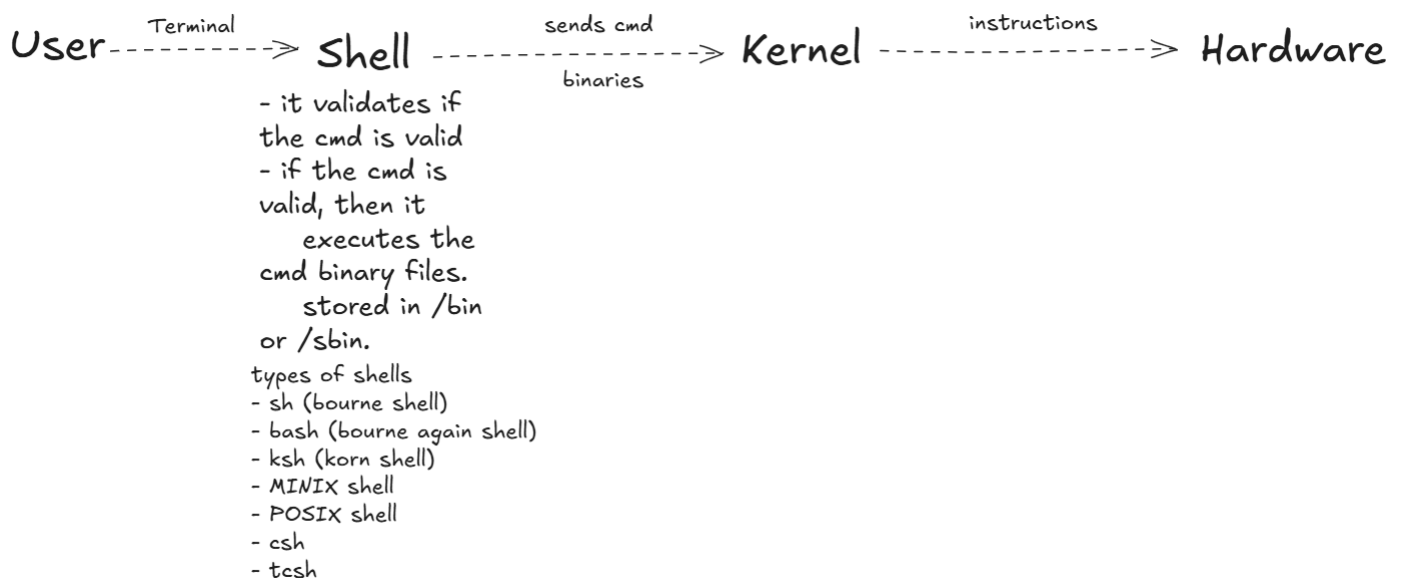**UNIX**

- ✓ Full form: **Un**iplexed **I**nformation and **C**omputing **S**ervice (UNICS → UNIX)
- ✓ Linux is derived from UNIX OS.
- ✓ UNIX was publicly introduced in "**1st Jan 1970**" → Epoch date = current date – 1st Jan 1970
- ✓ Developed by Dennis Ritchie and Kemp Thomson in AT&T bell labs.
- ✓ Developed using C language.
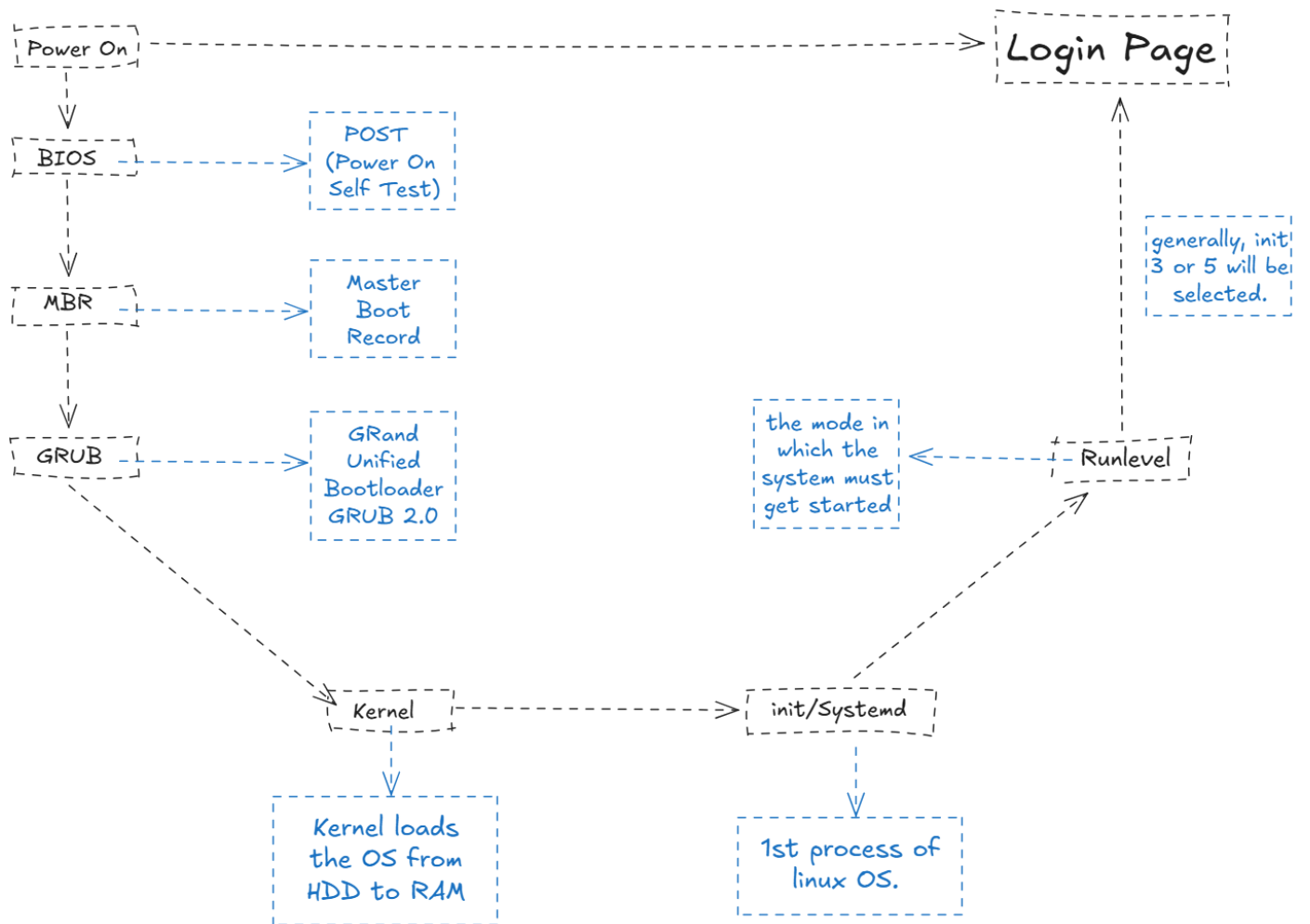- ✓ UNIX is hardware dependent.
- ✓ UNIX is freeware

Linux

- ✓ Linux was introduced on Sept 17th, 1991.
- ✓ Linux is hardware independent.
- ✓ Linus B. Torvalds developed Linux as a "Free/Open source" project.
- ✓ Linux is Opensource.

Open source → Free to download, free to use, free to share, code can be modified.

Freeware → Free to download, free to use, free to share, code cannot be modified.

User --------Terminal--------> Shell --------sends cmd binaries--------> Kernel --------instructions--------> Hardware

- it validates if the cmd is valid
- if the cmd is valid, then it executes the cmd binary files. stored in /bin or /sbin.

types of shells
- sh (bourne shell)
- bash (bourne again shell)
- ksh (korn shell)
- MINIX shell
- POSIX shell
- csh
- tcsh

Linux booting process:

Power On → Login Page

BIOS → POST (Power On Self Test)

MBR → Master Boot Record

GRUB → GRand Unified Bootloader GRUB 2.0

Kernel → Kernel loads the OS from HDD to RAM

init/Systemd → 1st process of linux OS.

Runlevel → the mode in which the system must get started

generally, init 3 or 5 will be selected.

File system Hierarchy Standard (FHS):

/   →   Forward slash, nameless root

- **/bin**   = contains regular user's command binaries.
- **/sbin** = contains root user's command binaries.
- **/etc**   = contains all the configuration files in it.
- **/dev**   = contains all the hardware devices.
  - Hard disk → /dev/sda (SCSI Disk A) or /dev/had (Hard Disk A)
  - CD/DVD → /dev/sr0
- **/home** = regular user accounts
  - Yash → /home/yash
  - Jahnavi → /home/Jahnavi
- **/lib**   = library for developers (/libx64)
- **/mnt**   = mount point for temporary devices.
  - Pen drive (movie) → /mnt/movie
- **/opt**   = additional software packages (legacy apps)
- **/proc** = running processes, kernel, storage
- **/root** = home directory for root user.
- **/tmp**   = temporary directory
- **/usr**   = user installed application (C:\Program Files)
- **/var**   = variable length files (it stores Log files) → /var/logs
- **/run**   = run time apps (including media CD/DVD → /run/media/<username>/<ISO-filename>).
- **/boot** = contains bootable files (minimum: 350MB)

Task – Install CentOS 9 in graphical and document (take snapshots) all the installation steps.