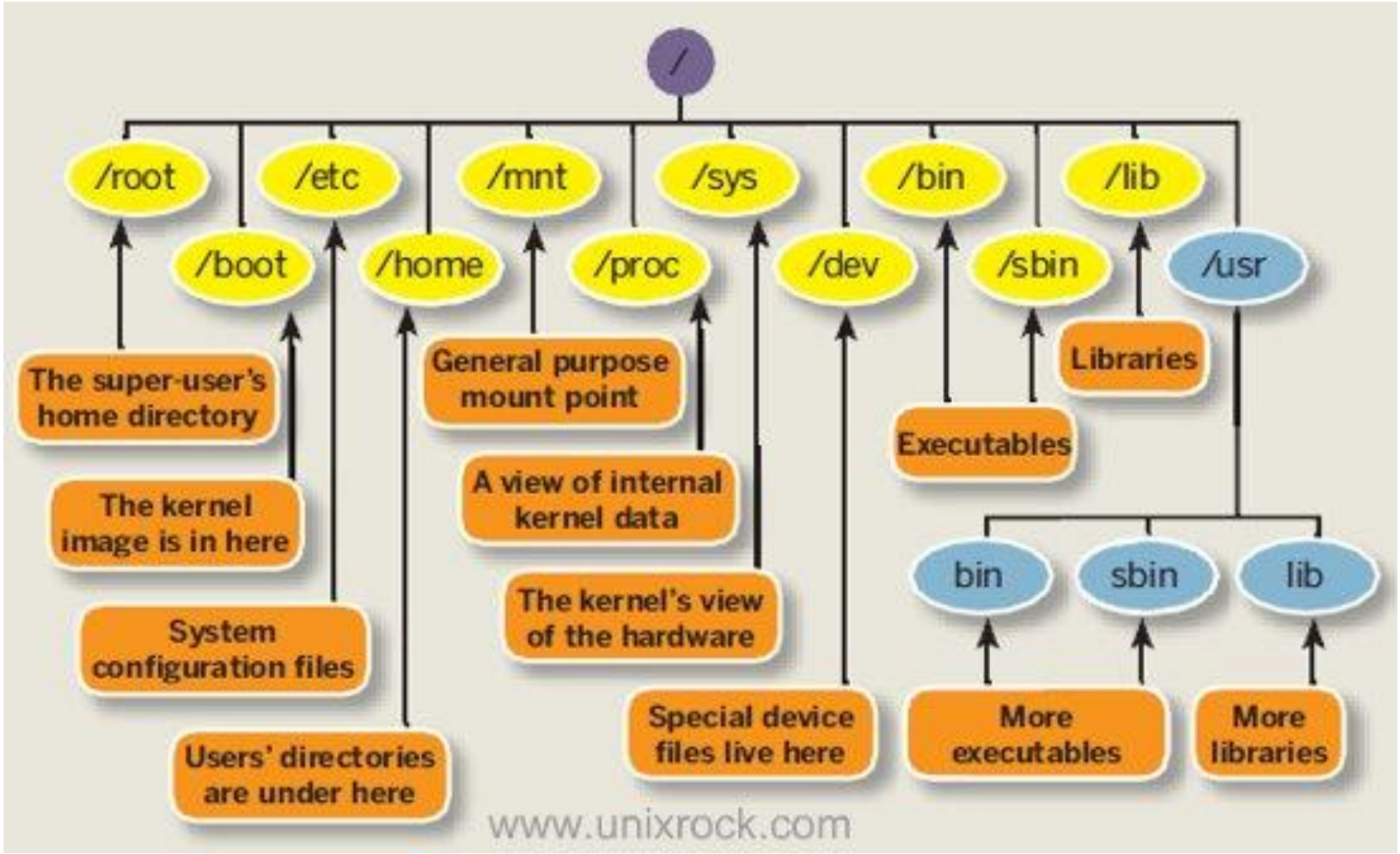
Linux

Browsing the Filesystem

The LINUX / UNIX File-System

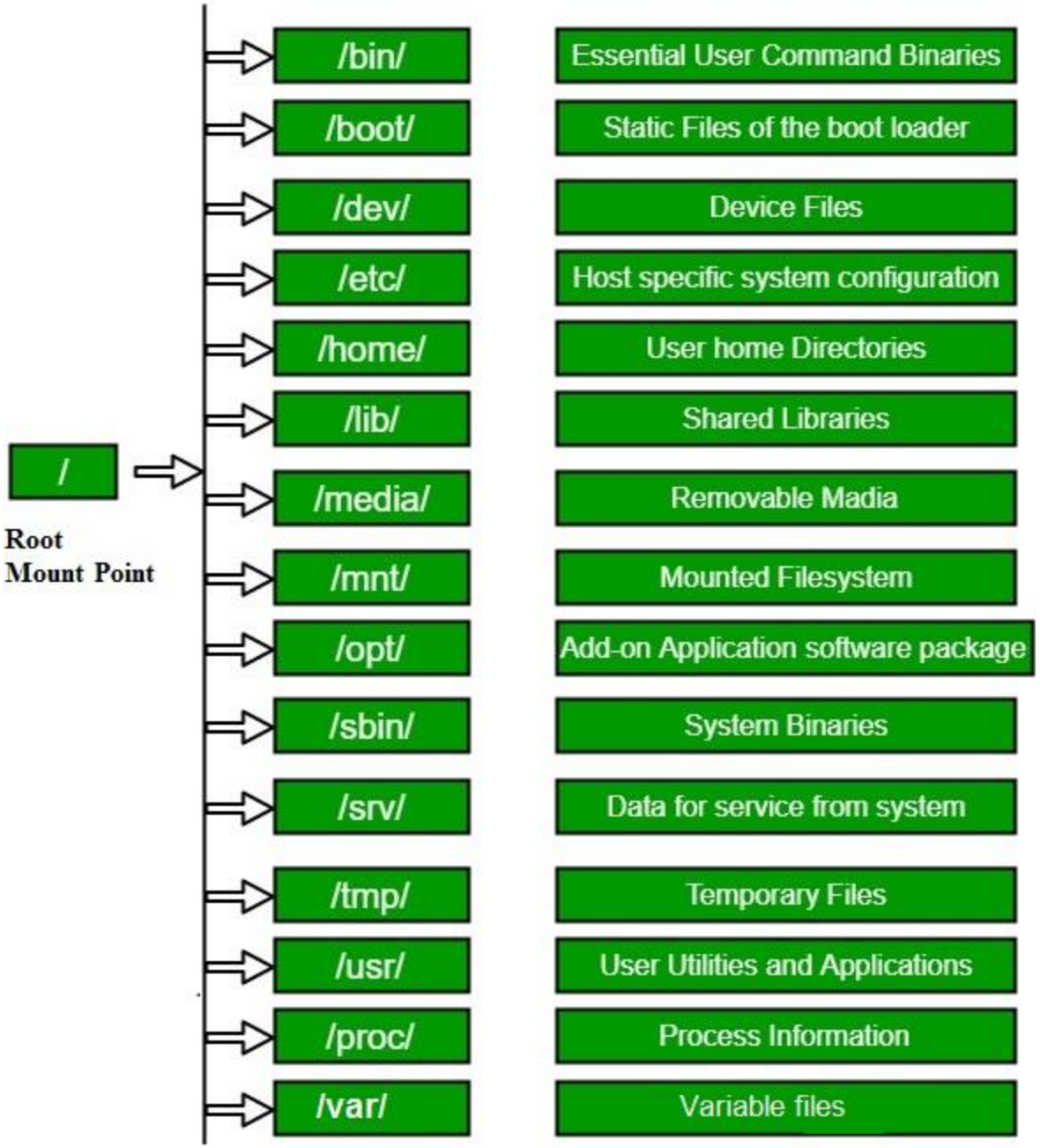
- The Linux file-system is hierarchical and is made of directories, sub-directories and files
- Directories can contain sub-directories and/or files
- In Linux/Unix, everything is represented as a file
- This includes processes, devices, applications, I/O sockets, etc

Linux File-System Structure



Linux File Hierarchy Concepts

- Files and directories are organized into a single-rooted inverted tree structure
- Filesystem begins at the root directory, represented by a single “/” (forward slash) character
- Names are case-sensitive
- Paths are delimited by /


/
Root
Mount Point
/bin/
Essential User Command Binaries
/boot/
Static Files of the boot loader
/dev/
Device Files
/etc/
Host specific system configuration
/home/
User home Directories
/lib/
Shared Libraries
/media/
Removable Madia
/mnt/
Mounted Filesystem
/opt/
Add-on Application software package
/sbin/
System Binaries
/srv/
Data for service from system
/tmp/
Temporary Files
/usr/
User Utilities and Applications
/proc/
Process Information
/var/
Variable files

File and Directory Names

- Names may be up to 255 characters
- All characters are valid, except the forward-slash
  - It may be unwise to use certain special characters in file or directory names
  - Some characters should be protected with quotes when referencing them
- Names are case-sensitive
  - Example: MAIL, Mail, mail, and mAiL
  - Again, possible, but may not be wise

Absolute and Relative Pathnames

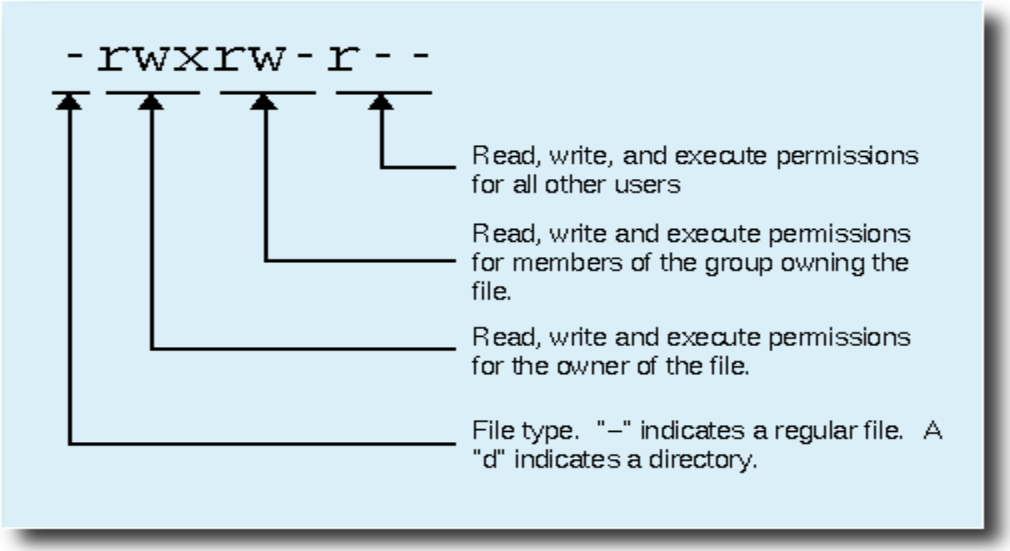
- **Absolute pathnames**
  - Begin with a forward slash
  - Complete "road map" to file location
  - Can be used anytime you wish to specify a file name
- **Relative pathnames**
  - Do not begin with a slash
  - Specify location relative to your current working directory
  - Can be used as a shorter way to specify a file name

Linux File Permissions & Basic User Management

- A **user** is an entity, in a Linux operating system, that can manipulate files and perform several other operations.
- Each user is assigned an ID that is unique for each user in the operating system.
- **ID 0 is assigned to the root user** and the IDs 1 to 999 (both inclusive) are assigned to the system users and hence the ids for local user begins from 1000 onwards.
- **Groups** make it easy to manage users with the same security and access privileges. A user can be part of different **groups**

- `id`: displays the system identifications of a specified user
- `useradd`: add a user to the system.
- `userdel`: delete a user account and related files.
- `addgroup`: add a group to the system.
- `delgroup`: remove a group from the system.
- `usermod`: modify a user account.

In Linux, each file is associated with an owner and a group and assigned with permission access rights for three different classes of users: **file owner, group members, Others (everybody else).**



Basic Networking Commands

- ifconfig
  - used to check the assigned IP address of a server
- ping
  - used to check whether a network is available and if a host is reachable

vi/vim Editor

- Text editors of Linux
- Three main modes:
  - Command Mode (default): Move cursor, cut/paste text, change mode
  - Insert Mode: Modify text
  - Ex Mode: Save, quit, etc
- Esc exits current mode
- EscEsc always returns to command mode
- Common write/quit commands:
  - :w writes (saves) the file to disk
  - :wq writes and quits
  - :q! quits, even if changes are lost