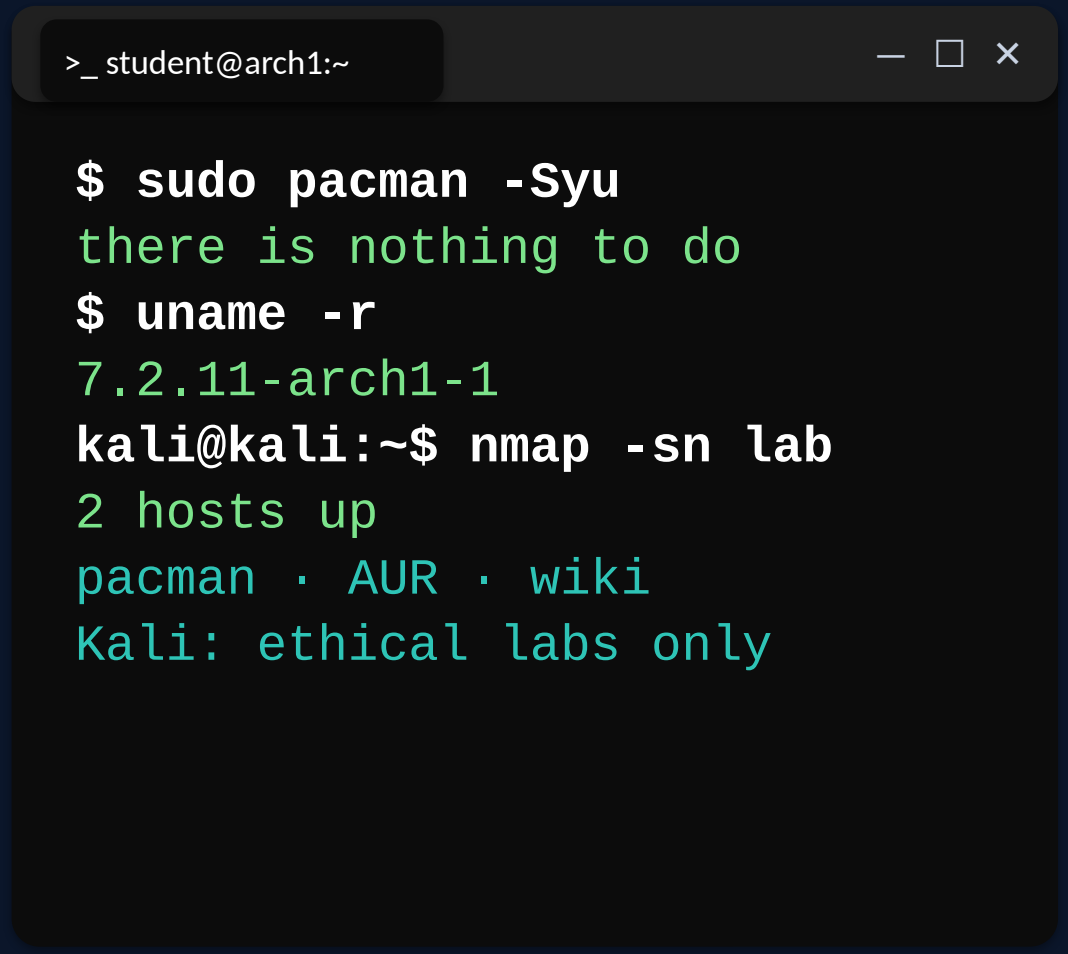



LESSON 6 OF 12

# Arch & Kali Linux

**Rolling · pacman · AUR · Security Lab**

## The Arch Family & Troubleshooting: EndeavourOS, CachyOS, SteamOS

Full Course · Arch 2026.11 · Kali 2026.3 (Nov 2026)

# What You Will Learn in Lesson 6

- Arch-based distributions and how they differ
- EndeavourOS, CachyOS, Manjaro, SteamOS, Garuda
- Troubleshooting method for a rolling release
- Rescue with the ISO: mount, arch-chroot, fix
- Common breakages: kernel/initramfs, bootloader, keyring, GPU
- Getting help: Arch Wiki, forums, bug tracker
- Arch half review

# The Arch Family

| Distro | What it adds | Uses Arch repos? |
|---|---|---|
| **EndeavourOS** | Calamares installer, a few helpers; 'Arch with a friendly start' | Yes, directly (+ small own repo) |
| **CachyOS** | Performance: tuned kernels, x86-64-v3/v4 optimized packages | Rebuilt + own repos |
| **Manjaro** | Own delayed/tested repos, own tools (pamac, mhwd) | No — own branches |
| **SteamOS 3** | Valve's gaming OS for Steam Deck; immutable, A/B updates | Own snapshot of Arch |
| **Garuda** | Btrfs + snapshots by default, gaming tools, flashy desktops | Arch + Chaotic-AUR |
| **BlackArch** | 2,800+ security tools as a repo on top of Arch | Add-on repository |

# A Troubleshooting Method for Rolling Releases

```
# 1. What changed? Look at the last pacman transactions
[student@arch1 ~]$ grep -E 'upgraded|installed' /var/log/pacman.log | tail -20
# 2. Is it already known? Check archlinux.org/news and the forum
# 3. Read the logs
[student@arch1 ~]$ journalctl -b -p err ; journalctl -b -1 -p err   # this / last boot
[student@arch1 ~]$ sudo dmesg -T --level=err,warn
# 4. Isolate: other kernel (linux-lts)? new user? snapshot from before?
# 5. Fix: downgrade from cache, roll back snapshot, or apply the news steps
[student@arch1 ~]$ sudo pacman -U /var/cache/pacman/pkg/<pkg-previous-version>.pkg.tar.zst
# 6. Report upstream / Arch bug tracker if it is a real bug
```

# Rescue with the ISO and arch-chroot

```
# Boot the Arch ISO (same or newer than the installed system)
root@archiso ~ # lsblk -f
root@archiso ~ # cryptsetup open /dev/vda2 root      # only if LUKS
root@archiso ~ # mount -o subvol=@ /dev/vda2 /mnt     # Btrfs root subvolume
root@archiso ~ # mount /dev/vda1 /mnt/boot
root@archiso ~ # arch-chroot /mnt
[root@archiso /]# pacman -Syu                          # finish an interrupted upgrade
[root@archiso /]# mkinitcpio -P                        # rebuild initramfs
[root@archiso /]# bootctl update   (or grub-mkconfig -o /boot/grub/grub.cfg)
[root@archiso /]# exit ; umount -R /mnt ; reboot
```

# Common Breakages and Fixes

| Symptom | Likely cause | Fix |
| --- | --- | --- |
| **Kernel panic / no init after update** | Interrupted upgrade, broken initramfs | ISO → arch-chroot → pacman -Syu → mkinitcpio -P |
| **'unknown filesystem' / modules missing** | Booted kernel ≠ installed modules | Reboot after kernel upgrade; keep linux-lts |
| **No boot menu / bootloader gone** | Firmware update reset EFI entries | arch-chroot → bootctl install / grub-install |
| **Invalid or corrupted package (PGP)** | Old keyring | pacman -Sy archlinux-keyring && pacman -Su |
| **Black screen after GPU driver update** | NVIDIA/Mesa change (e.g. 590 dropped Pascal) | TTY (Ctrl+Alt+F3), check news, nvidia-580xx (AUR) or downgrade |
| **Disk full** | Package cache, journals, snapshots | paccache -rk1; journalctl --vacuum-size; snapper delete |

# Getting Help the Arch Way

| Where | How to ask well |
| --- | --- |
| Arch Wiki | Search first — most answers are already there (and work on other distros too) |
| Forums (bbs.archlinux.org) | Read the forum rules; show what you tried; paste outputs, not screenshots |
| Share logs | journalctl -b \| curl -F 'file=@-' https://0x0.st  (or paste.rs) |
| Bug tracker | gitlab.archlinux.org — packaging bugs; upstream for program bugs |
| Matrix / IRC | #archlinux on Libera.Chat for quick questions |
| Derivatives | EndeavourOS, CachyOS and Manjaro have their own forums — ask there first |

# Arch Half Review

| Lesson | Key skills |
| --- | --- |
| 1 | Rolling vs fixed releases; the Arch Way; where Arch and Kali fit; ethics |
| 2 | Verify the ISO; archinstall (Btrfs, systemd-boot, profile); manual install steps |
| 3 | pacman -S/-R/-Q/-F/-U; full upgrades only; reflector; keyring; pacdiff; cache |
| 4 | AUR: read PKGBUILDs; makepkg -si; yay/paru; malware awareness |
| 5 | Weekly routine; Arch news; snapper + snap-pac; desktops; firewall; backups |
| 6 | Arch family; troubleshooting method; ISO rescue with arch-chroot; getting help |

# Summary and Homework

- EndeavourOS ≈ Arch + installer; CachyOS = performance; Manjaro = own repos
- SteamOS 3 is Arch-based; BlackArch adds security tools
- Method: pacman.log → news → logs → isolate → fix → report
- Rescue: ISO → mount → arch-chroot → pacman -Syu / mkinitcpio -P / bootloader
- Ask well: Wiki first, outputs not screenshots, derivative forums for derivatives
- Homework: break arch1's initramfs in a snapshot-protected VM and rescue it from the ISO

# Thank You! 🙏

Free videos & PDFs: www.MyWebUniversity.com

Slides for this lesson: MyWebUniversity.com/presentations

**YouTube: @MyWebUniversity · @MyWebUniversity-Dari**

Wahidullah Lutfy — Founder and Director of IT of MyWebUniversity, and CS teacher

Book: The Direct Path to Linux Ubuntu (Amazon · Barnes & Noble)

**Learn it, then pass it on.**