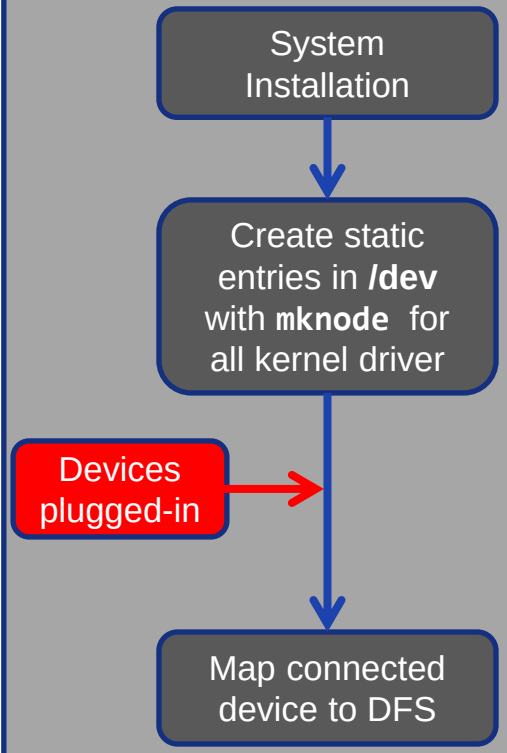
LPIC-2 TRAINING COURSE

Topic 203: Devies & Filesystem

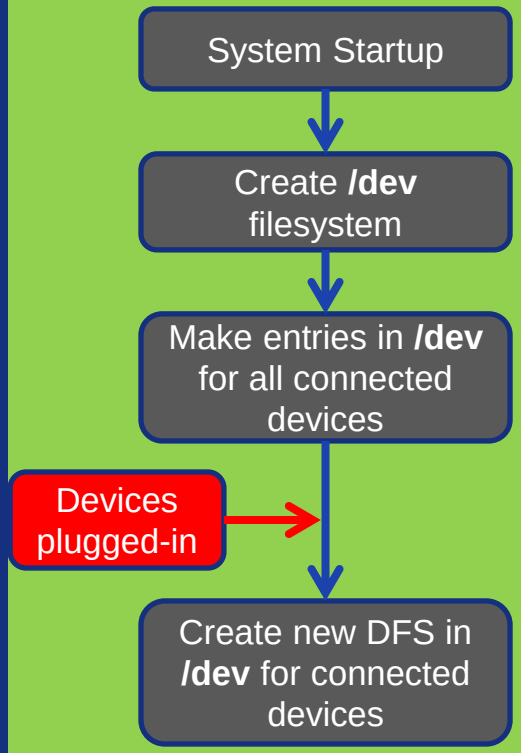
Static /dev vs. dev-FS vs. udev

Static /dev



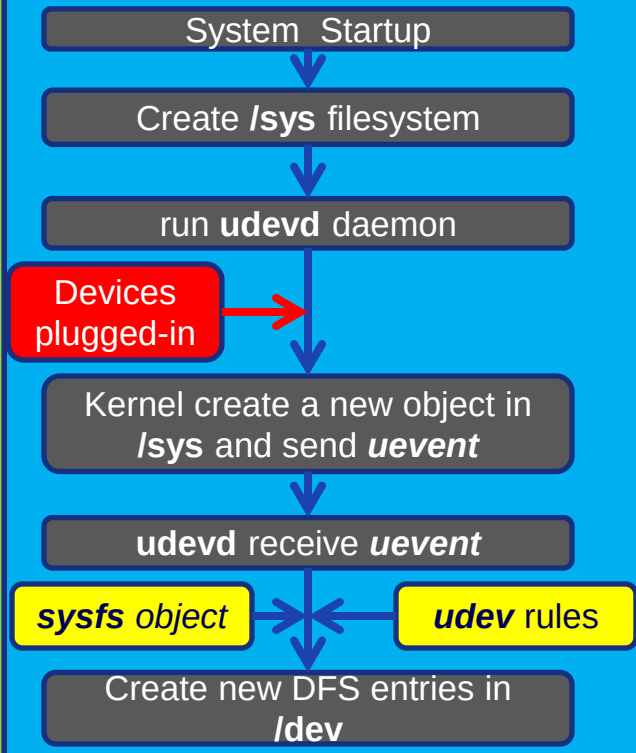
- Huge mess of entries, most are useless
- Use major/minor number
- Does not tell which devices exist
- Kernel determine
- Not persistent
- No dynamic allocation of entries

dev-FS



- Only shows the entries for devices that are currently present
- Use major/minor number
- Does not provide a way to name devices persistently
- Kernel determine

udev



- Only shows the entries for devices in the system
- Does not care about major/minor number schemes
- Provides the ability to name devices in persistent maner
- User determine

udev rules

- Default rules directory: ***/etc/udev/rules.d***
  - Rules are parsed in lexical order
  - Default rules: ***50-udev.rules***
  - You should create ***10-local.rules*** and put your rules in there
  - Example: ***/dev/disk/***
- Rules syntax:
  - Match keys: used with operators **==** or **!=**
    - **KERNEL** *match against the name the kernel assigns*
    - **SUBSYSTEM** *match against the subsystem of a device*
    - **DRIVER** *match against the actual driver name for a device*
    - **SYSFS{attr}** *match against **sysfs**'s attribute for a device*
  - Assignment keys: used with operators **=**, **+=** or **:=**
    - **NAME** *the name of the device node to be used*
    - **SYMLINK** *creates a symlink to the assigned node name*
    - **USER,GROUP,MODE** *set ownership and permissions to the assigned node name*
  - Examples:

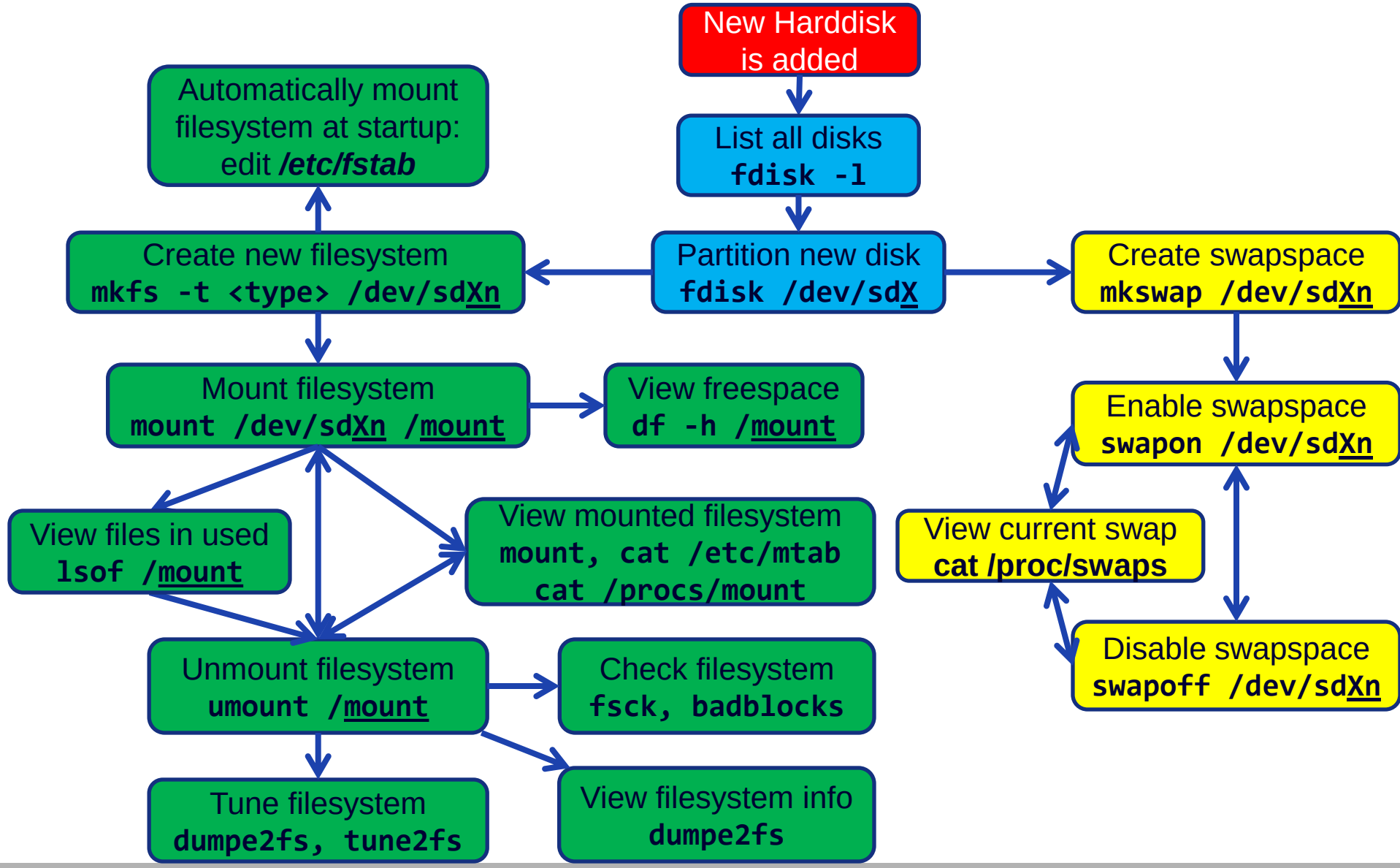
```
SUBSYSTEM==”block”,SYSFS{model}==”HP_V213”,NAME=“MyUSB”,SYMLINK+=”bkup”,MODE=“0666”
```

Exercise 1: Using udev rules

Change the name of **/dev/sdb** node to **/dev/mydisk2**

1. Find device object in sysfs
   - Hint: **`find /sys -name sdb`**
2. View the sysfs attributes of sdb:
   - Hint: **`udevinfo -a -p /sys/block/sdb`**
3. Choose the unique attributes of sdb, eg: **`SYSFS{size}`** and **`SYSFS{model}`**
4. Create a new udev rules file (***10-local.rules***) in ***/etc/udev/rules.d*** and add a new rule for **sdb**:
   - Hint: **`SUBSYSTEM==“block”, SYSFS{size}==“20971520”, SYSFS{model}==“VMware Virtual S”, NAME=“mydisk2”`**
5. Reboot your system

Maintaining Harddisk Filesystem



Maintaining CD-ROM filesystem

- Creating an ISO image from a directory:
  - **mkisofs -r -o outfile.iso /path/to/input/directory**
- Creating ISO image from CD-ROM:
  - **dd if=/dev/cdrom of=/path/to/outfile.iso**
- Mounting an ISO image:
  - **mount -t iso9660 -o ro,loop /path/to/isofile /mountpoint**
- Burning an ISO image:
  - **cdrecord -scanbus**
  - **cdrecord -v speed=N dev=X,Y,Z -data /path/to/isofile**
- Making a copy of data CD:
  - **cdrecord -v speed=N dev=X,Y,Z -isosize /dev/cdrom**

Exercise 2: Loopback device

1. Create a virtual disk with the size of 40960 block
   - Hint: **`dd if=/dev/zero of=/tmp/vdisk count=40960`**
2. Format the virtual disk with ext3 filesystem
   - Hint: **`mkfs -t ext3 -F /tmp/vdisk`**
3. Create a mountpoint
   - Hint: **`mkdir /vdisk`**
4. Mount the virtual disk
   - Hint: **`mount -t ext3 -o rw,loop /tmp/vdisk /vdisk`**
5. Test writing/reading/setting quota on this filesystem

Thank You !

BACKUP SLIDES