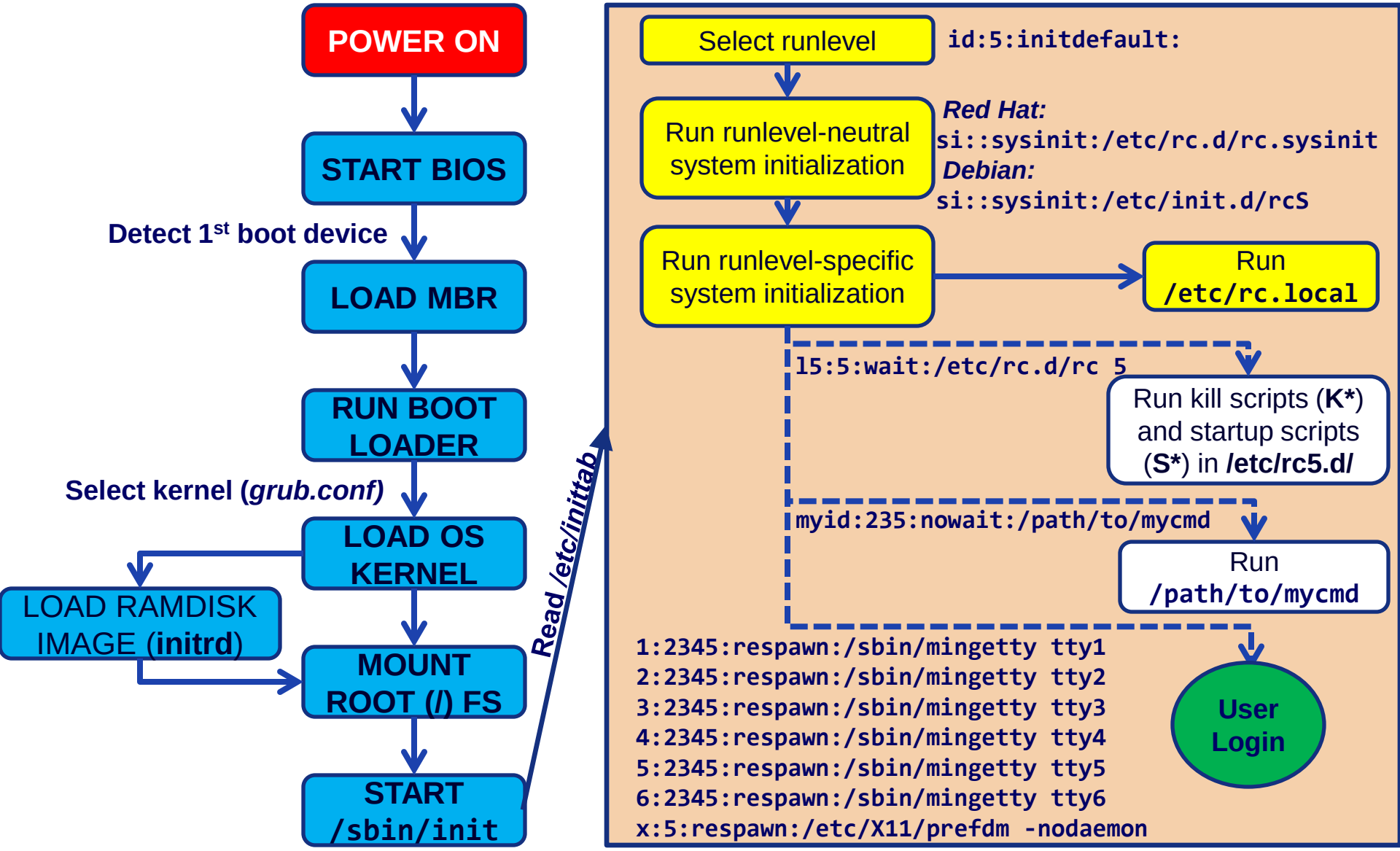
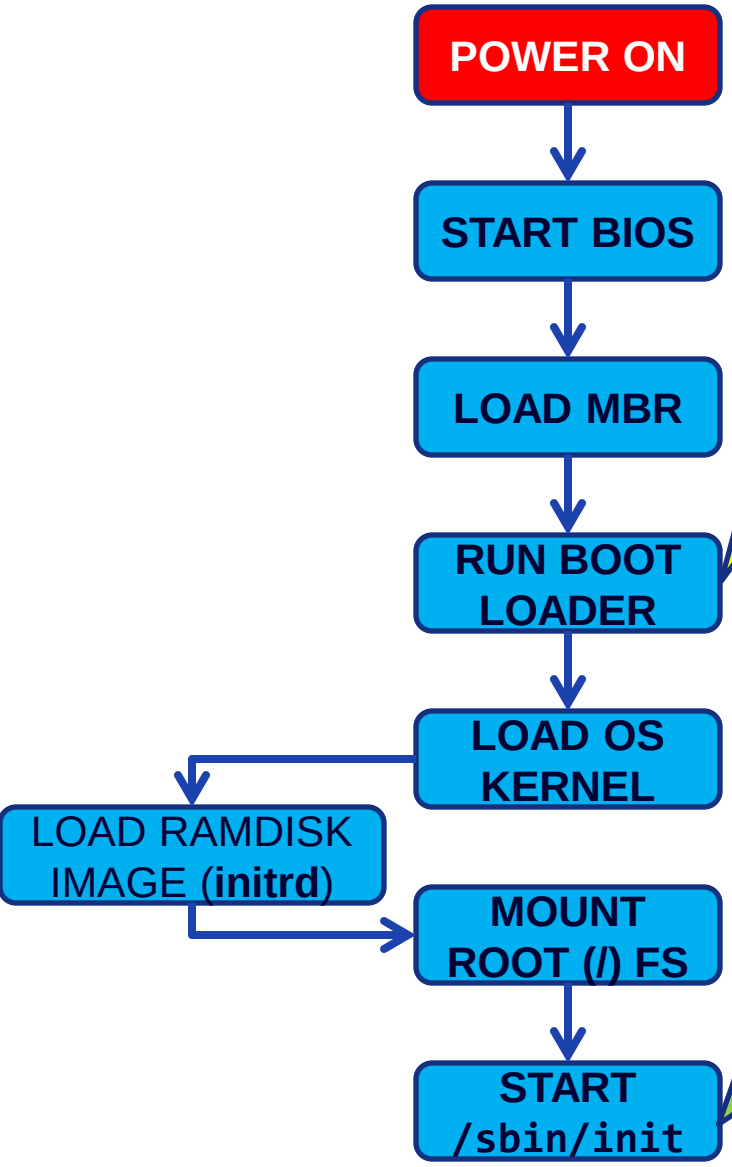
LPIC-2 TRAINING COURSE

Topic 202: System Startup & Recovery

System Startup & Boot Processes



Alternate The Boot Process

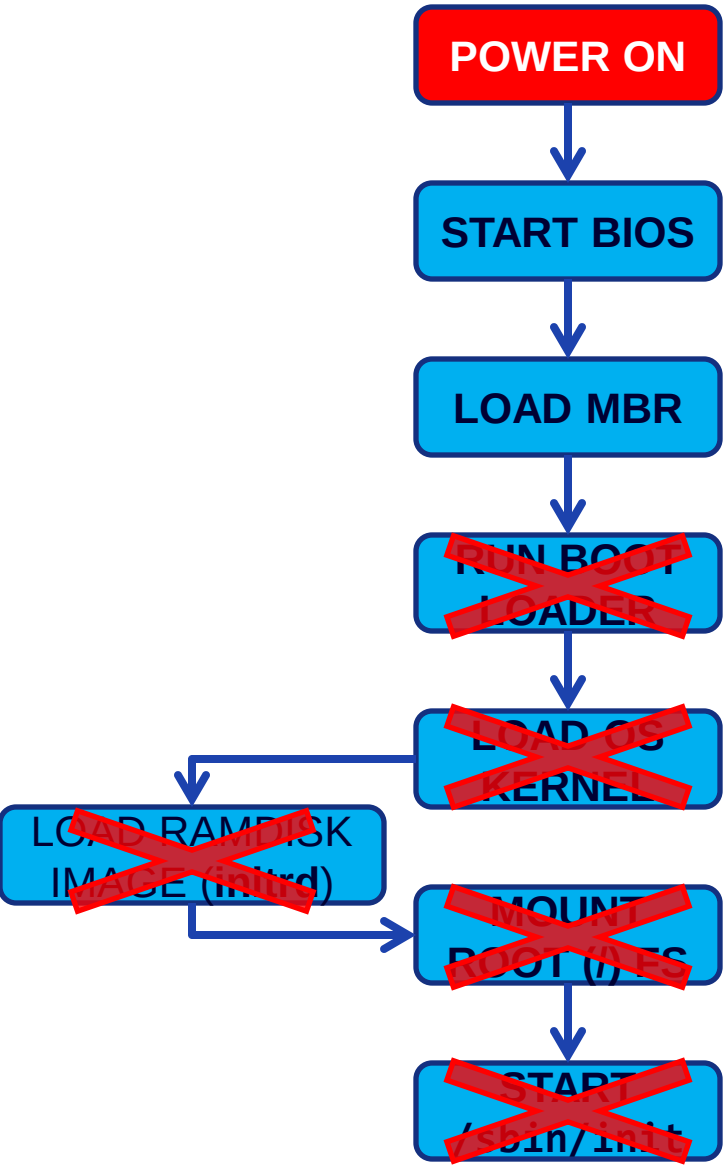


[/boot/grub/grub.conf]

```
default=0
timeout=10
splashimage=(hd0,0)/grub/splash.xpm.gz
hiddenmenu
title Red Hat Enterprise Linux (2.6.12-64smp)
  root (hd0,0)
  kernel /vmlinuz-2.6.12-64smp ro root=LABEL=/ rhgb quite
  initrd /initrd-2.6.12-64smp.img
title Linux Fedora (2.6.8)
  root (hd1,0)
  kernel /vmlinuz-2.6.8 ro root=LABEL=/ rghb quite
  initrd /initrd-2.6.8.img
```

- Change the default runlevel: edit **/etc/inittab**
  - Eg: **`id:3:initdefault:`**
- Change autorun programs/services for runlevels
  - Add, edit, remove entry from **/etc/inittab**
  - RedHat-based: using **`chkconfig`**
    - Eg: **`chkconfig --level 345 httpd on`**
  - Debian-based: using **`update-rc.d`**
    - Eg: **`update-rc.d sshd httpd 345`**
- Auto start a program with system boot: add your command(s) to **/etc/rc.local**

Prepare for The Worst



Single Mode could helps:

1. Interrupt the boot process at GRUB
2. Press **e** to edit the boot command
3. Select the line that starts with **kernel**
4. Press **e** to edit the kernel command
5. Append **S** to the end of the line

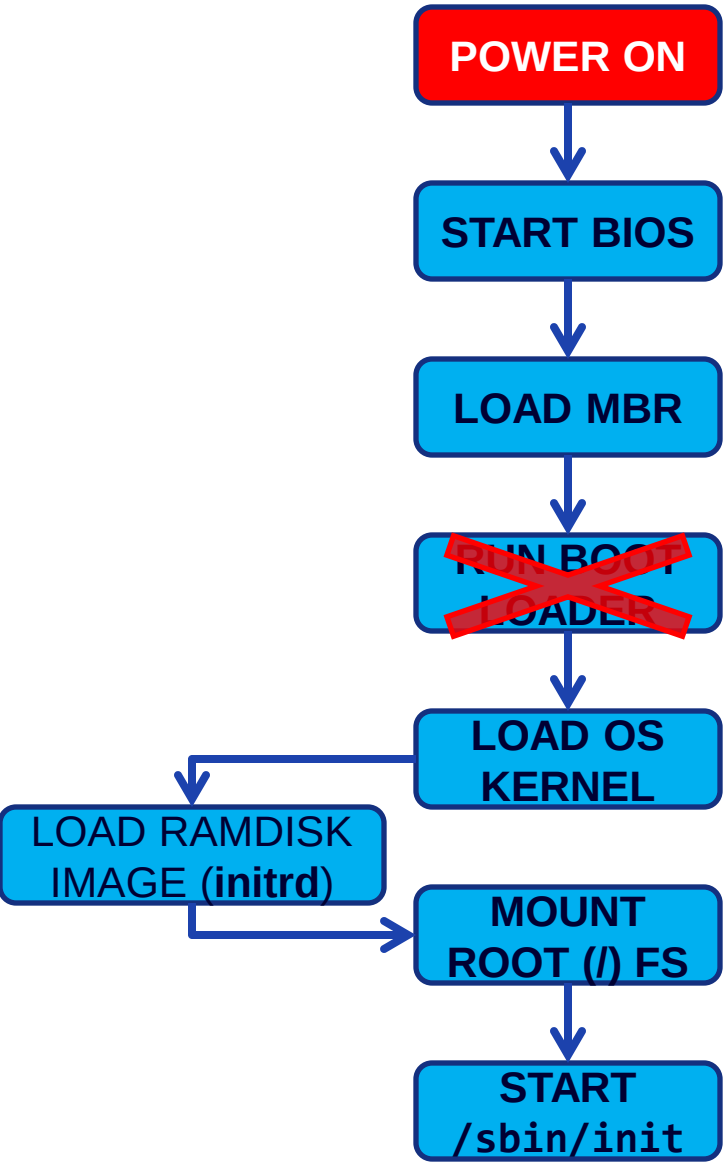
```
kernel /vmlinuz-2.6.12 ro root=LABEL=/ rhgb quite S
```

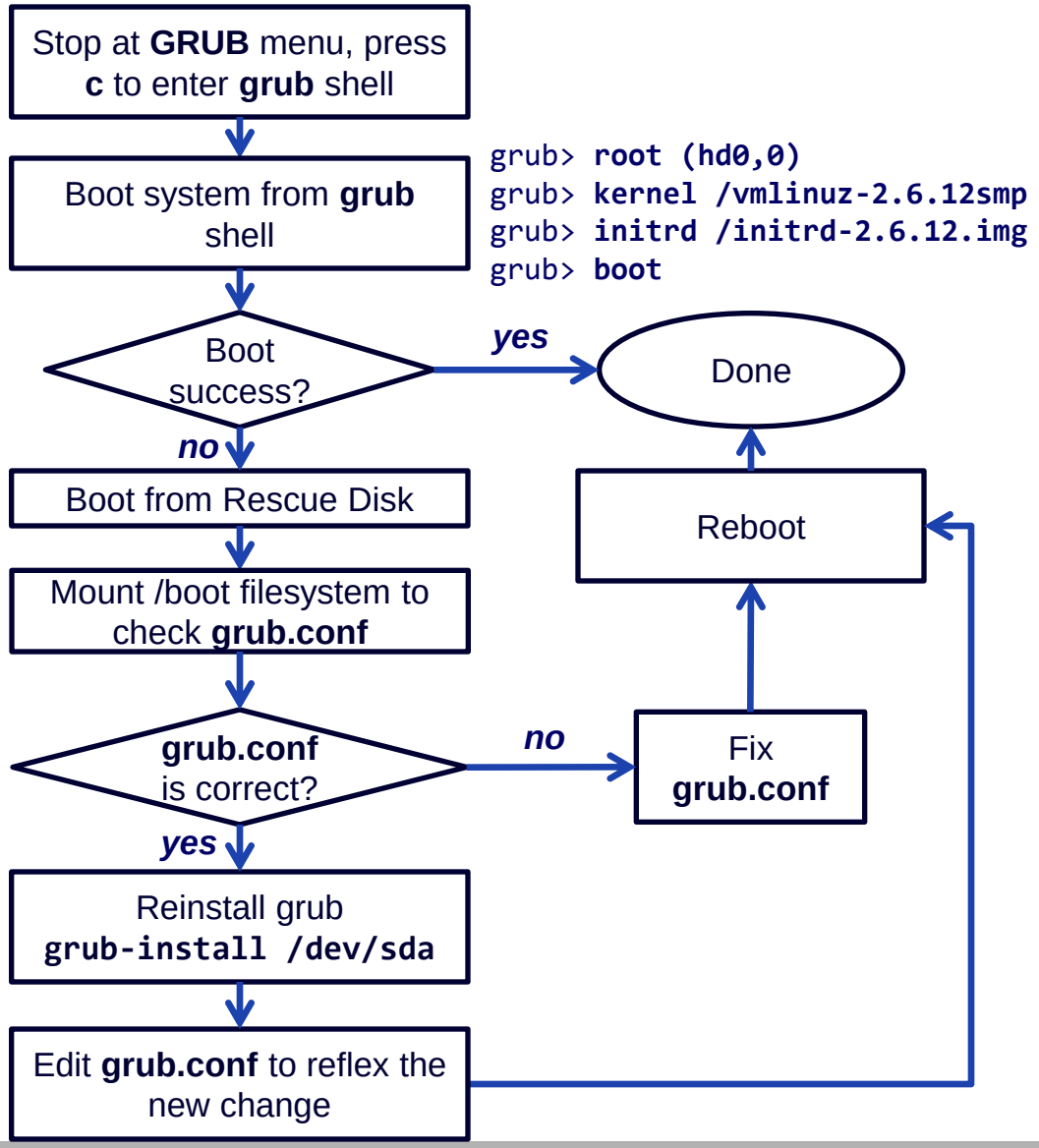
6. Press **Enter** to commit the change
7. Hit **b** to boot

Rescue Disk should always be ready:

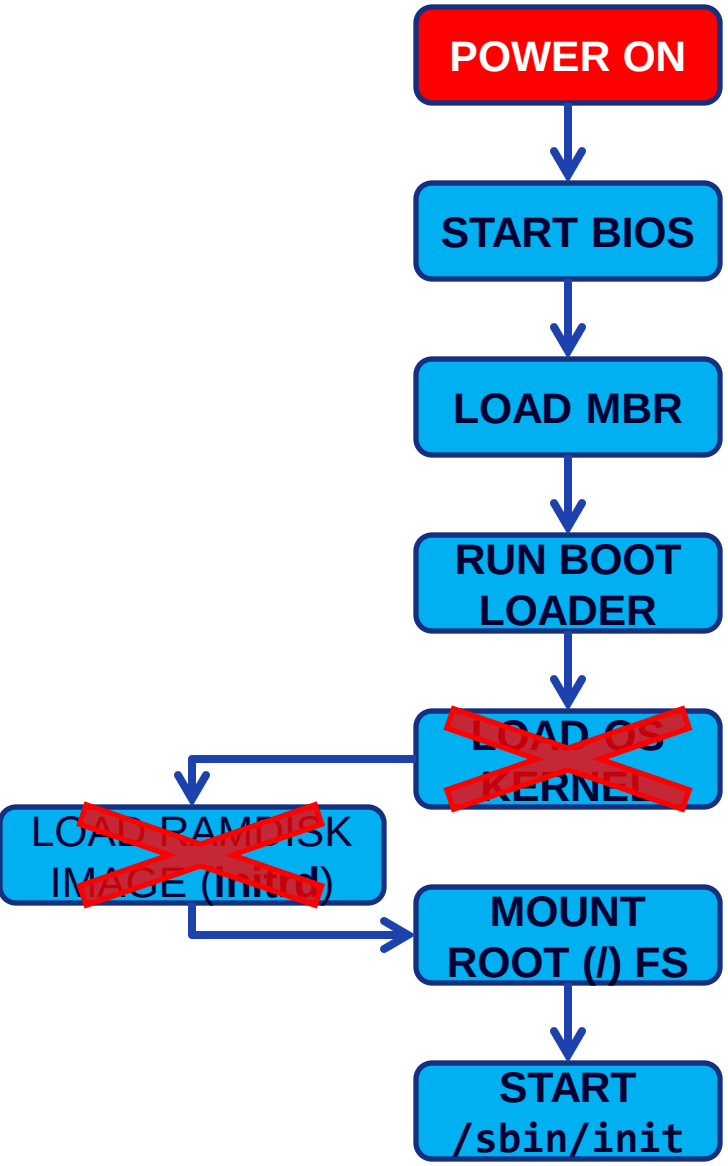
- ✓ Using a Linux LiveCD
- ✓ Making a rescue floppy disk with **mkbootdisk** or **mkrescue**

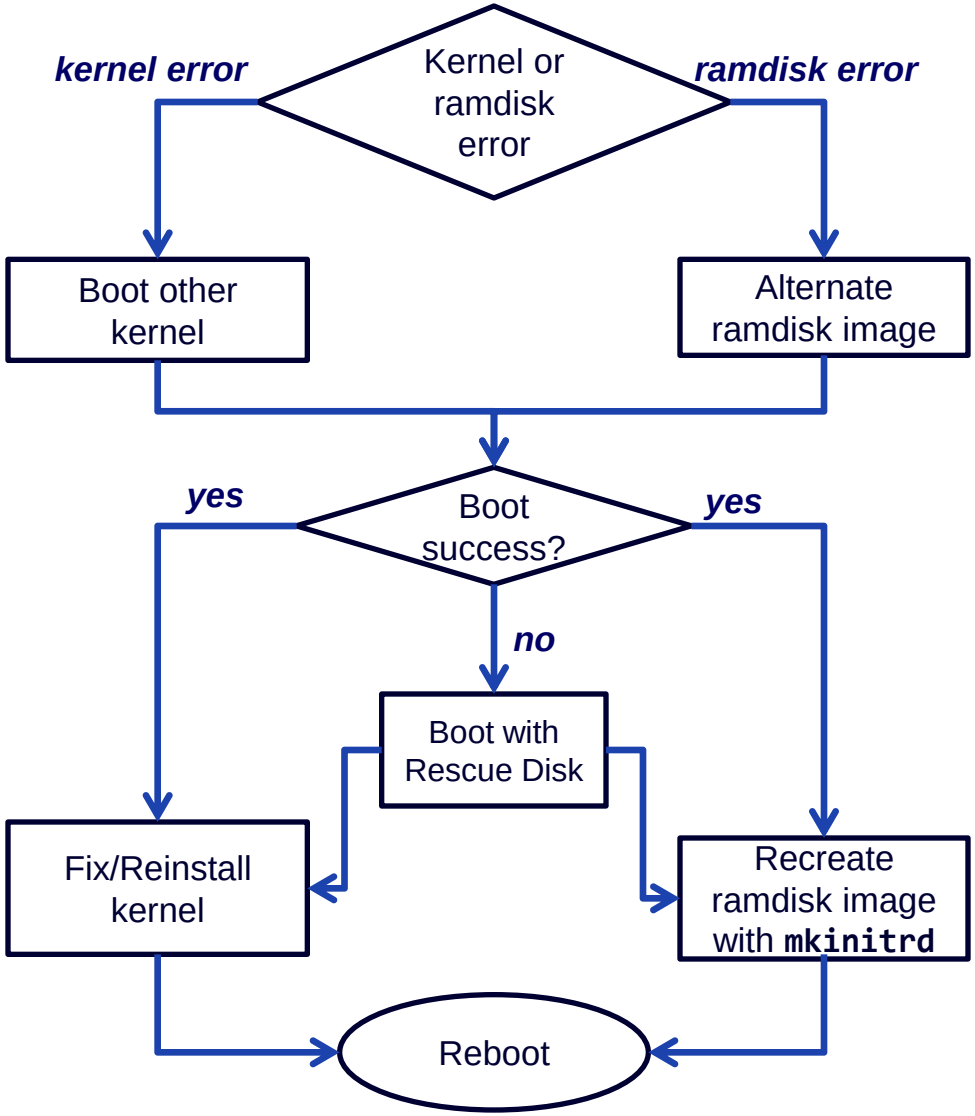
Boot Loader Error?



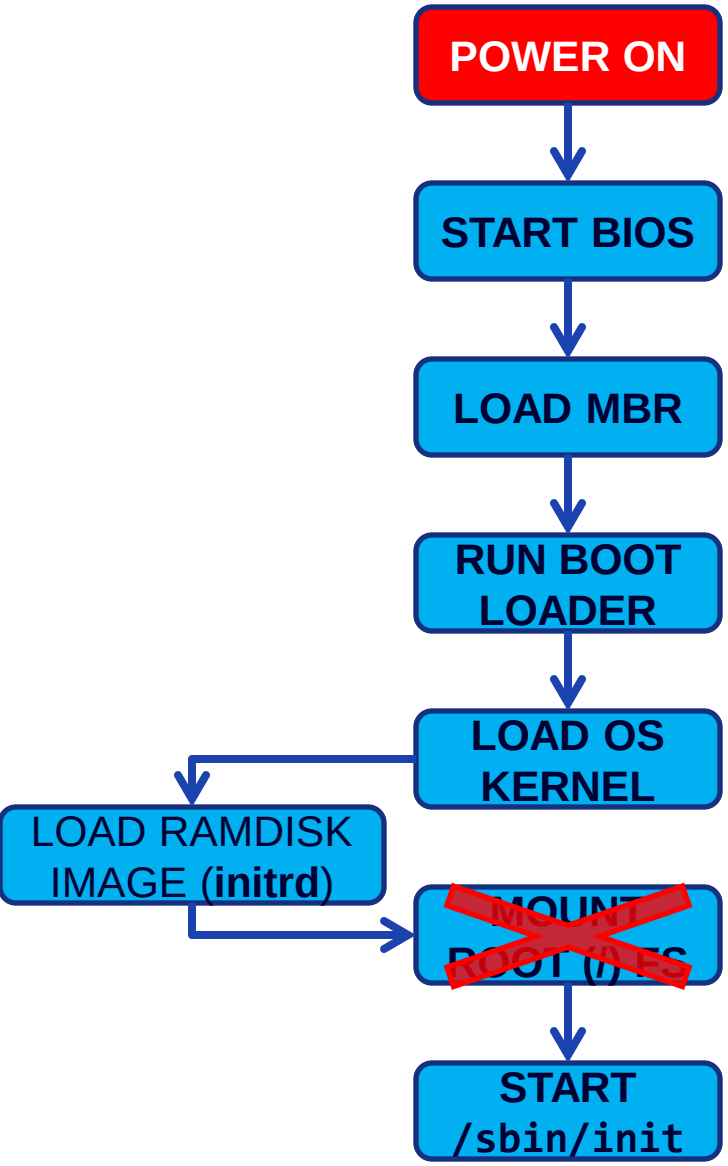


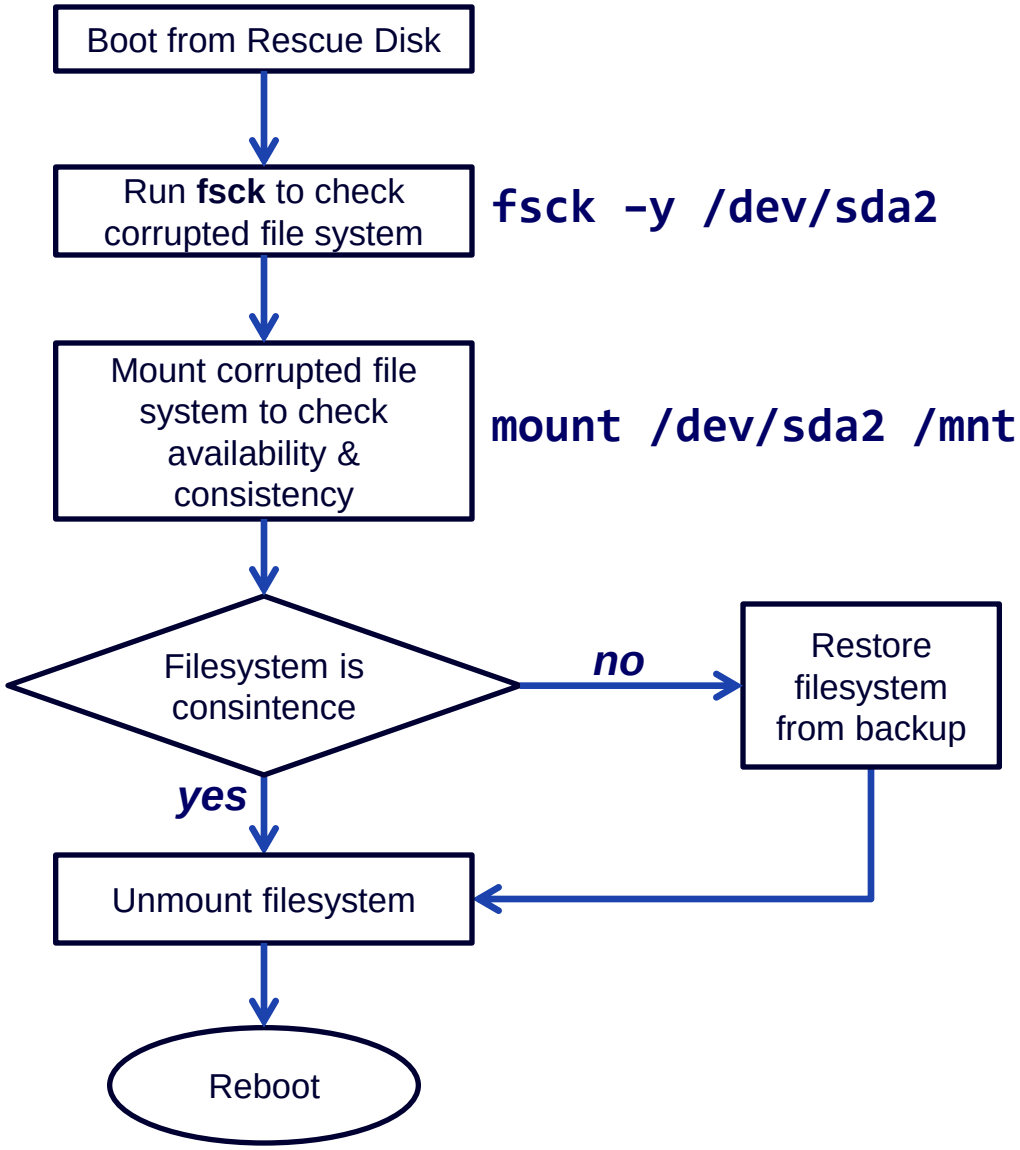
Kernel/Ramdisk Error?



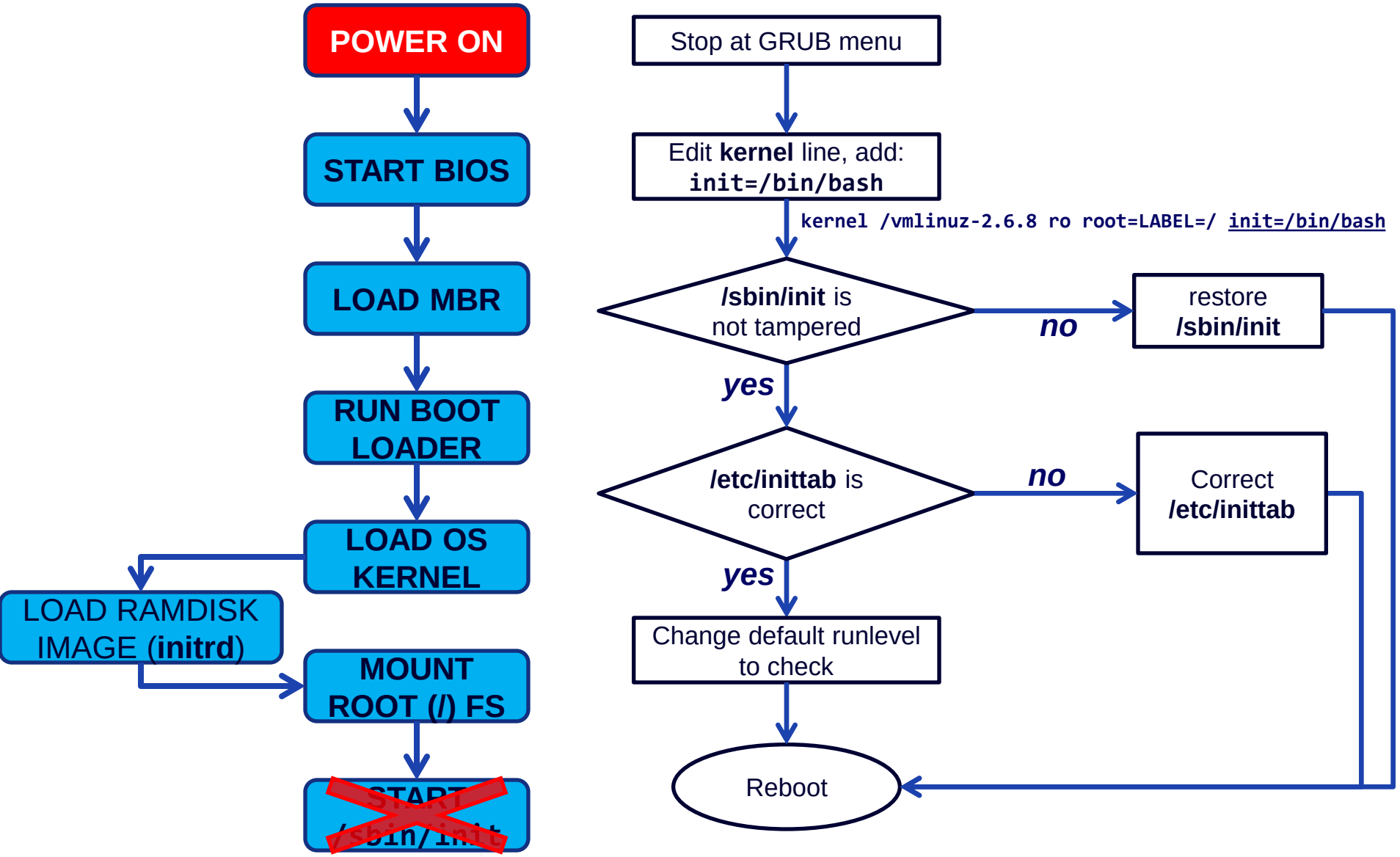


Can Not Mount Root (/) FS?





Can Not Start /sbin/init?



Exercise 1

Using **grub** shell

1. Startup your machine and stop at GRUB screen
2. Press **c** to enter grub shell
3. Select boot disk/partition
   - Eg: **`grub> root (hd0,0)`**
4. View **grub**'s configuration file
   - Eg: **`grub> cat /grub/grub.conf`**
5. Select kernel to boot with single mode
   - Eg: **`grub> kernel /vmlinuz-2.6.18-164.el5 ro root=LABEL=/ rhgb S`**
6. Select ramdisk image
   - Eg: **`grub> initrd /initrd-2.6.18.164.el5.img`**
7. Boot your system with selected kernel and ramdisk image
   - Eg: **`grub> boot`**

Exercise 2

Booting system with **/bin/bash** instead of **/sbin/init**

1. Startup your machine and stop at GRUB screen
2. Select version to boot
3. Press **e** to edit parameters before booting
4. Move to the line starts with **kernel**, press **e** and append **init=/bin/bash** to the end of this line.
   - Eg: `kernel /vmlinuz-2.6.18-164.el5 ro root=LABEL=/ rhgb init=/bin/bash`
5. Press **Enter** to save your change, then press **b** to boot
6. Remount the root (/) filesystem with *read/write* permission
   - Eg: `mount -o rw,remount /`
7. Edit **/etc/inittab** to change the default runlevel
   - Eg: `vi /etc/inittab`
8. Reboot your system to verify the change

Exercise 3

Using Rescue Disk

1. Download the SystemRescueCD iso from ***http://www.sysresccd.org***
2. Boot your system using the Rescue Disk with the **default boot options**
3. Verify that your harddisks are correctly recognized
   - Eg: **`fdisk -l`**
4. Mount the first partition of your first harddisk on **/first**. What does this filesystem contain?
   - Eg: **`mkdir /first && mount /dev/sda1 /first`**
5. Mount the second partition of your first harddisk on **/second**. What does this filesystem contain?
   - Eg: **`mkdir /second && mount /dev/sda2  /second`**
6. Edit the **inittab** file to change the default runlevel of your original system
   - Eg: **`vi /second/etc/inittab`**
7. Reboot your system to verify the change

Thank You !

BACKUP SLIDES