

CS3210: Booting on your laptop

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Administrivia

- Lab1/2 (hours: 5h/10h/15h/20h/more?, difficulty: 0-5)?
- Lab2 deadline: Feb 8.
- (Feb 23) Quiz #1. Lab1-3, Ch 0-3, Appendix A/B
- (Feb 25) Time to brainstorm project ideas

Agenda

- Booting xv8 on thumb drive (a.k.a., LiveCD)
- Measuring the overheads of context switching (kernel/userspace)
- Implement a system call
- Run on both qemu and real machines

Questions

- Q: how do you install new operating systems?
- Q: xv6 qemu params? what's fs.img? xv6.img?

```
$ qemu -serial mon:stdio -hdb fs.img xv6.img -smp 2 -m 512
```

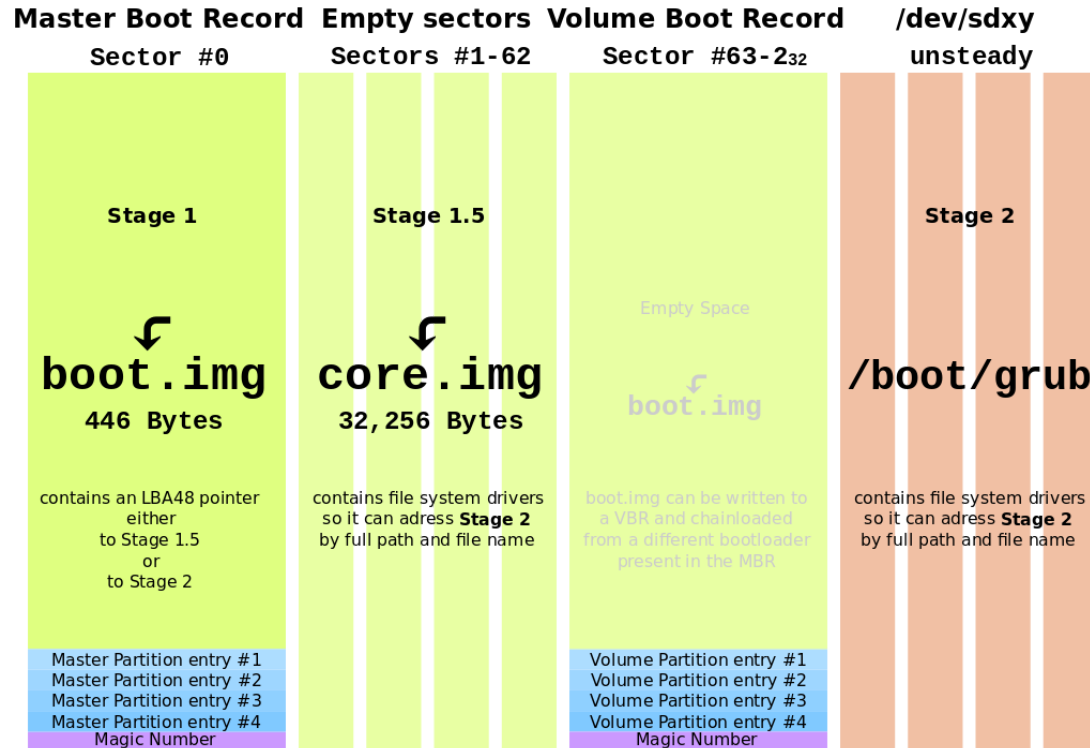
Booting

- Q: difference b/w QEMU and real hardware?
- Q: how does bootloader locate MBR?
- Q: how does our bootloader load the kernel?
- Q: what's multiboot specification?

Potential options

- Multiboot bootloaders: syslinux, GRUB1/2, PXE (networking booting)
- Installation on your linux machine:
- put kernel (multiboot) to /boot
- include xv6 option to /boot/grub/menu.lst

GNU GRUB



Each **partition table entry** comprises of **16 octets**:

Flag	Start CHS	Type	End CHS	Start LBA	Size
1	3	1	3	4	4 octets

DEMO

```
$ dd if=/dev/zero of=usb.img count=10000
$ echo -e "n\np\n\n\n\n\n\nw\nna\nnq" | fdisk usb.img
$ dd if=stage1 of=usb.img conv=notrunc
$ dd if=stage2 of=usb.img seek=1 conv=notrunc
$ echo -e "n\np\n\n\n\n\n\nw\nna\nnq" | fdisk usb.img
# losetup /dev/loop0 usb.img -o $((512*2048))
# mkfs -t ext2 /dev/loop0
# mount /dev/loop0 mnt
# cp ../kernelmemfs mnt/boot/
...
```


Tutorial

- DISCLAIMER: do inside virtual machine! (don't blame us ..)

```
$ git clone git://tc.gtisc.gatech.edu/cs3210-pub
```

or

```
$ cd cs3210-pub
```

```
$ git pull
```