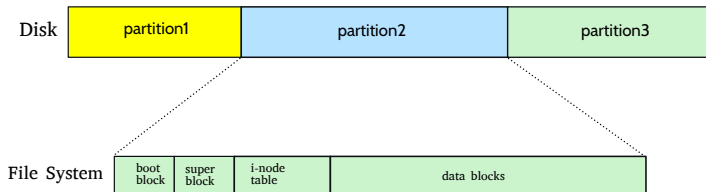# File System Structures

Alex Delis
alex.delis -at+ nyu.edu

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Paritioning a Disk - Lay out when multiple FSs are present
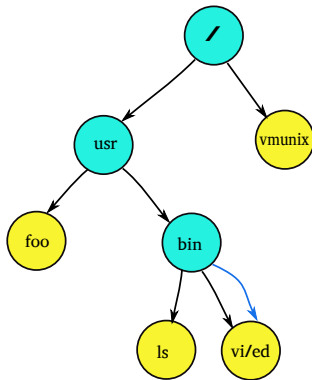

⇒ Each FS consists of:
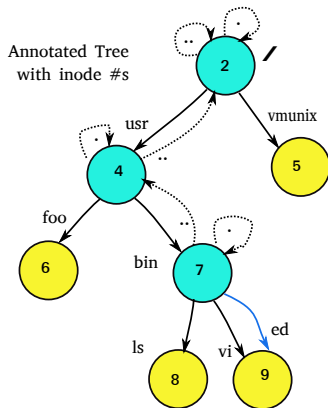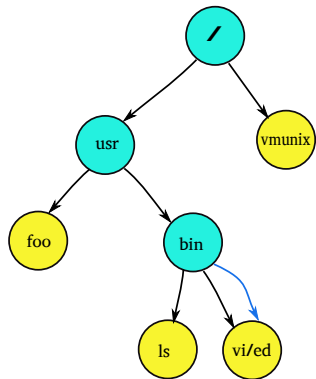
- ▶ Boot Block
- ▶ Super Block
- ▶ i-node table
- ▶ data blocks

Logical Listing of a FS Hierarchy
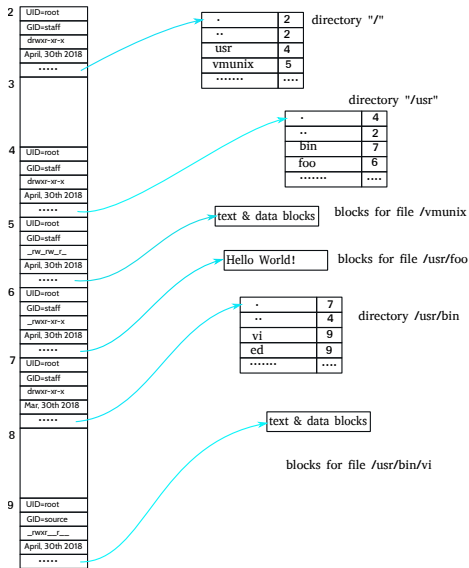


```
/
    .
    ..
    vmunix
    usr/
        .
        ..
        foo
        bin/
            .
            ..
            ls
            ed
            vi
```

FS Hierarchy vs. Annotated Representation

i-node table organization for FS

.	2	directory "/"
..	2	
usr	4	
vmunix	5	
....	....	

directory "/usr"

.	4	
..	2	
bin	7	
foo	6	
....	....	

text & data blocks   blocks for file /vmunix

Hello World!   blocks for file /usr/foo

.	7	
..	4	directory /usr/bin
vi	9	
ed	9	
....	....	

text & data blocks

blocks for file /usr/bin/vi

i-node entries:

2: UID=root, GID=staff, drwxr-xr-x, April, 30th 2018, ...
3:
4: UID=root, GID=staff, drwxr-xr-x, April, 30th 2018, ...
5: UID=root, GID=staff, _rw_rw_r_, April, 30th 2018, ...
6: UID=root, GID=staff, _rwxr-xr-x, April, 30th 2018, ...
7: UID=root, GID=staff, drwxr-xr-x, Mar, 30th 2018, ...
8:
9: UID=root, GID=source, _rwxr__r__, April, 30th 2018, ...

Relationship among file descriptors, open file descriptions, i-nodes