RAID-5

	D_0	D_1	D_2	D_3	D_4	
R W	0	1	2	3	P_{0-3}	R W
	4	5	6	P_{4-7}	7	
	8	9	P_{8-11}	10	11	
	12	P_{12-15}	13	14	15	
	P_{16-19}	16	17	18	19	

N, B

capacity $= (N-1) \cdot B$

reliability $= 1$

perf.

- latency
  - 1R (T)
  - 1W $(2T)$
- throughput
  - seq.
    - $R = (N-1) \cdot S$ MB/s
    - $W = (N-1) \cdot S$ MB/s
  - rand
    - $R = N \cdot R$ MB/s
    - $W = \left(\frac{N}{4}\right) \cdot R$ MB/s

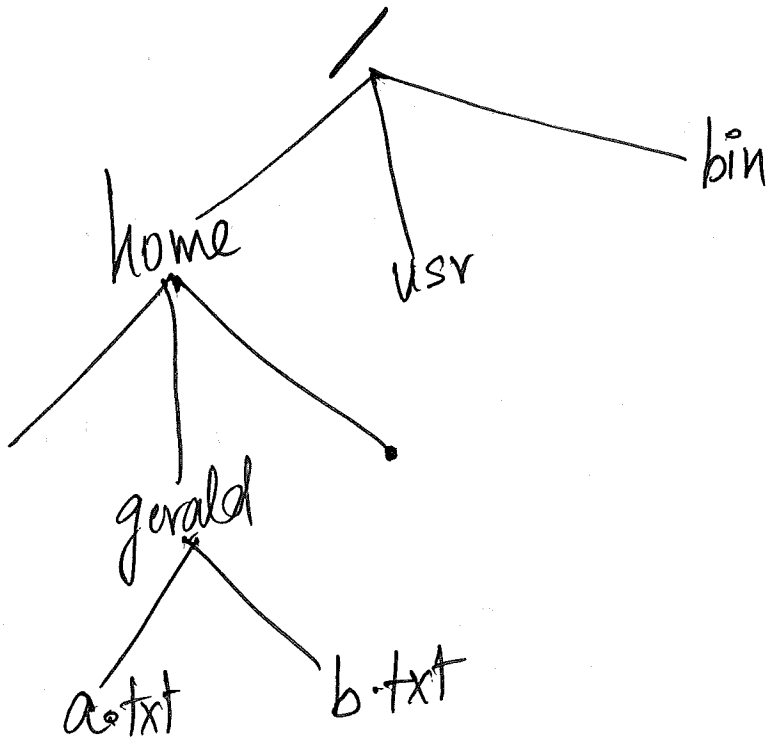
File System

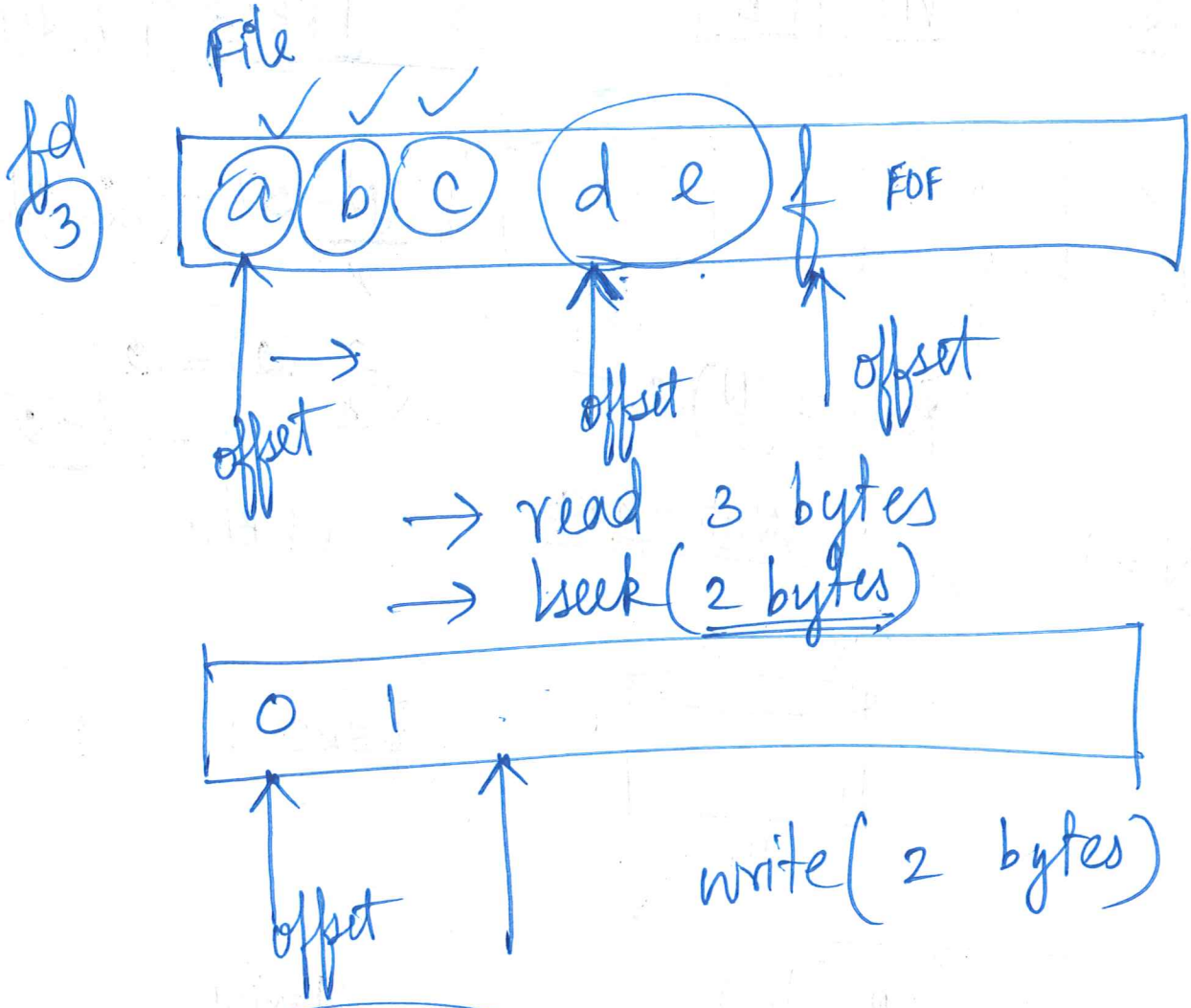
Virtualization - CPU [Process]

Memory → Address Space.

File - array of bytes.

Directory - special type of file.
- contains files & other dir.



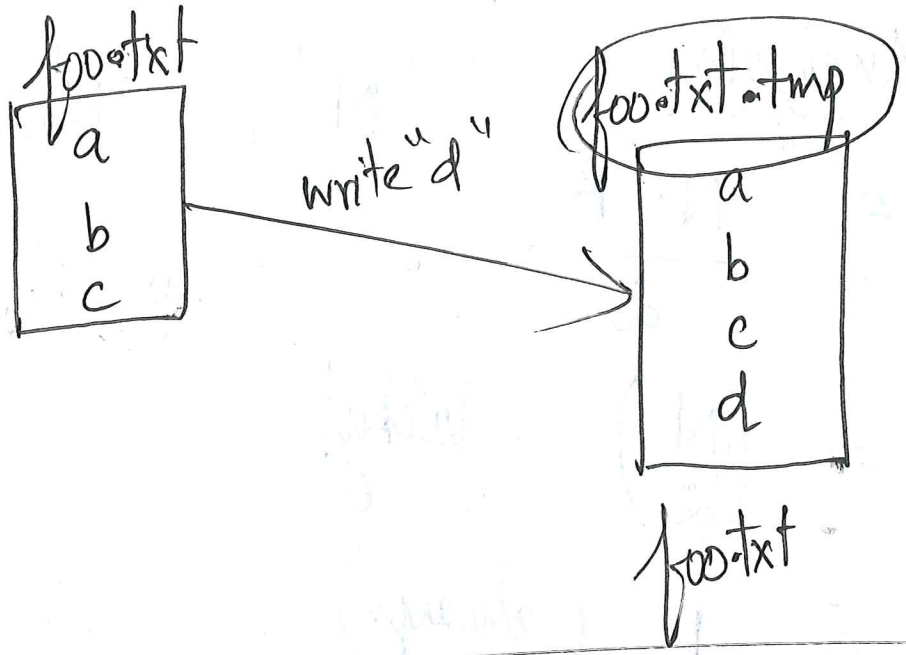


lseek ()

- set the offset to a particular position within the file.

Files

- human readable name
- internal name ("Inode" number). eg. 161921956



Directories

/home/gerald/CS537/a.txt

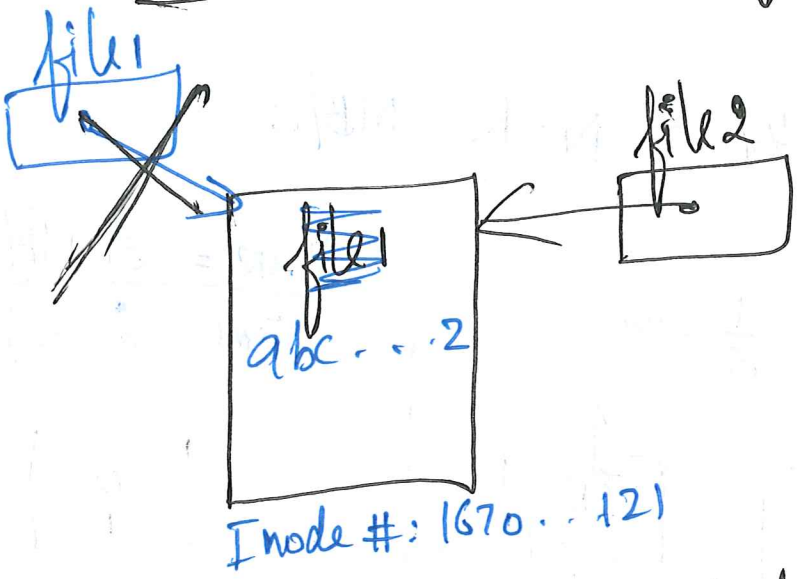
create ✓	— mkdir
remove ✓	— rmdir
read	— ls
write	— X

human name	inode
.	—
..	—
a.txt	—
b.txt	—

Links

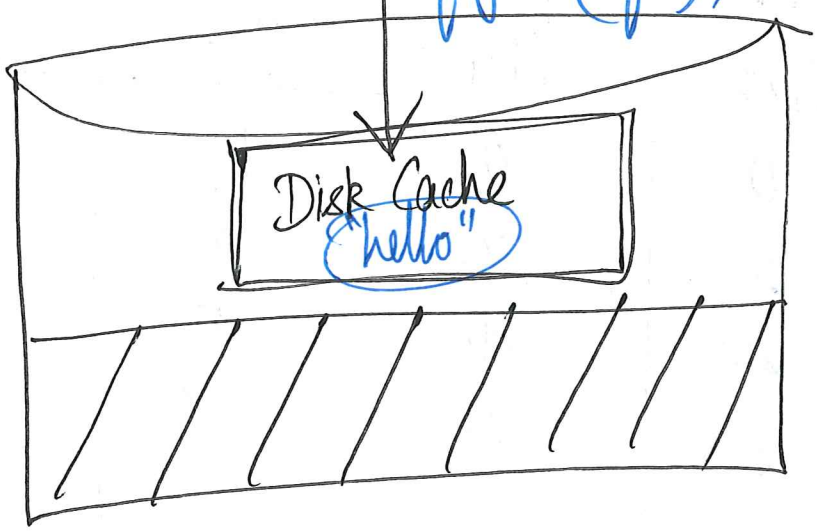
Hard Links

Soft Links



rm file1 ⇒ unlink(file1)

---

fsync(fd)

write(fd, "hello", 5);
fsync(fd);