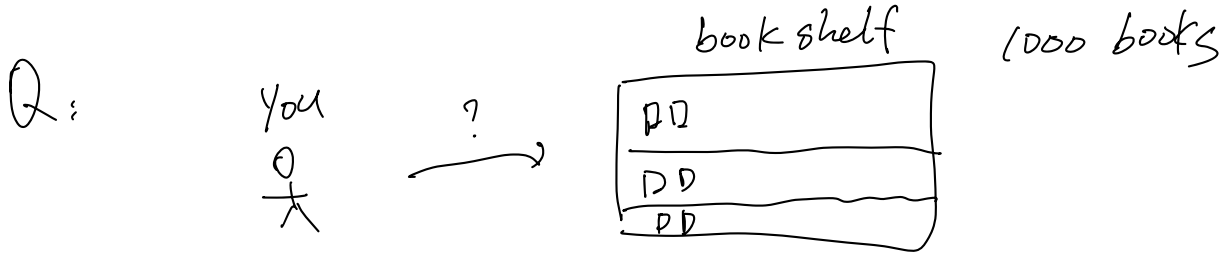
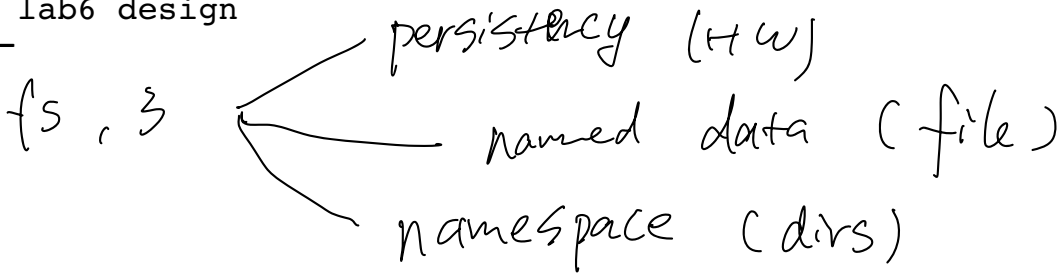
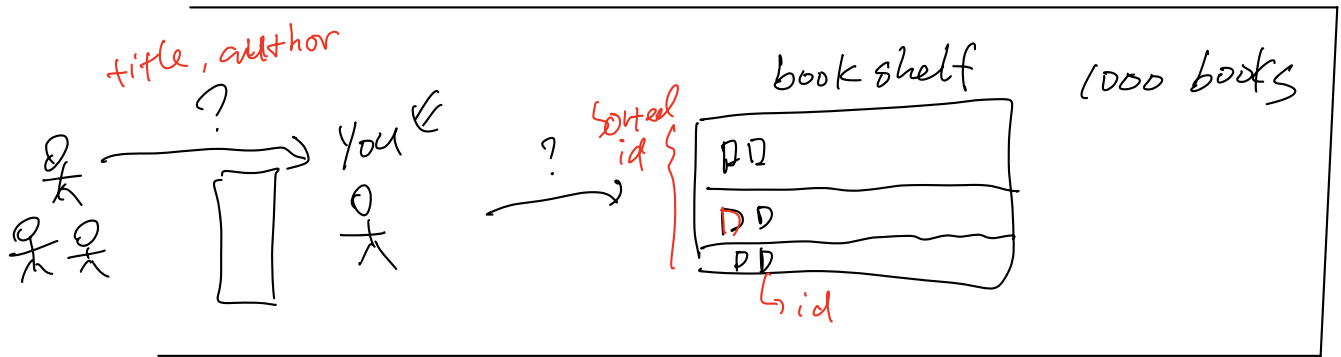


1. fs namespace
2. lab6 design

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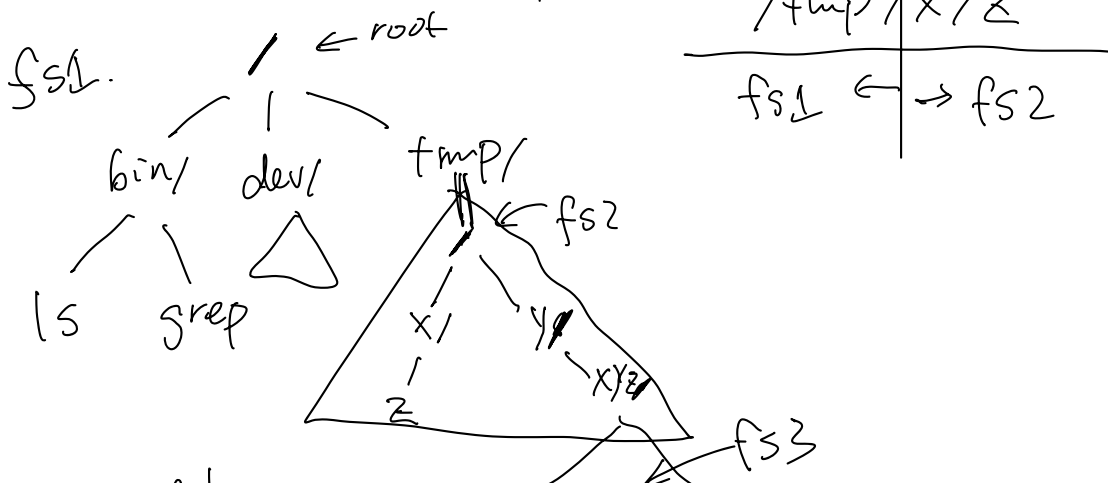


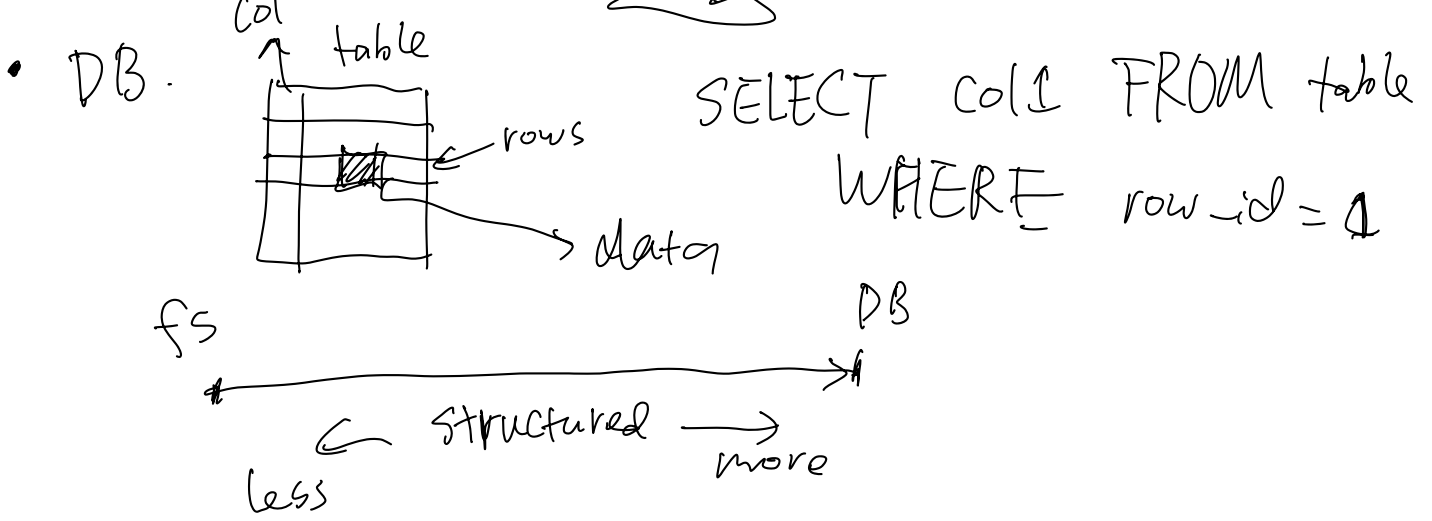
Categories: ordering  
 sorting by popularity  
 alphabetical + binary search



book: an extent-based RO fs

\* hierarchical namespace





\* "Hierarchical file systems are dead" (2009)  
Margo Seltzer and Nicholas Murphy, HotOS'09

i) storage size grows

17x	-- 1992:	500GB	, 512MB	, 100GB	300MB
7000x	-- 2009:	2TB	, 500GB	, 2TB	300GB
14x	-- 2023:	10TB SSD	, 10TB	, 20TB	{22TB disk}
100x	-- 2030(?):	1000TB			{8TB SSD}

7x, 30x

ii) "...they [file sizes] have not increased by the same margin."

2009 → 2023, < 100x

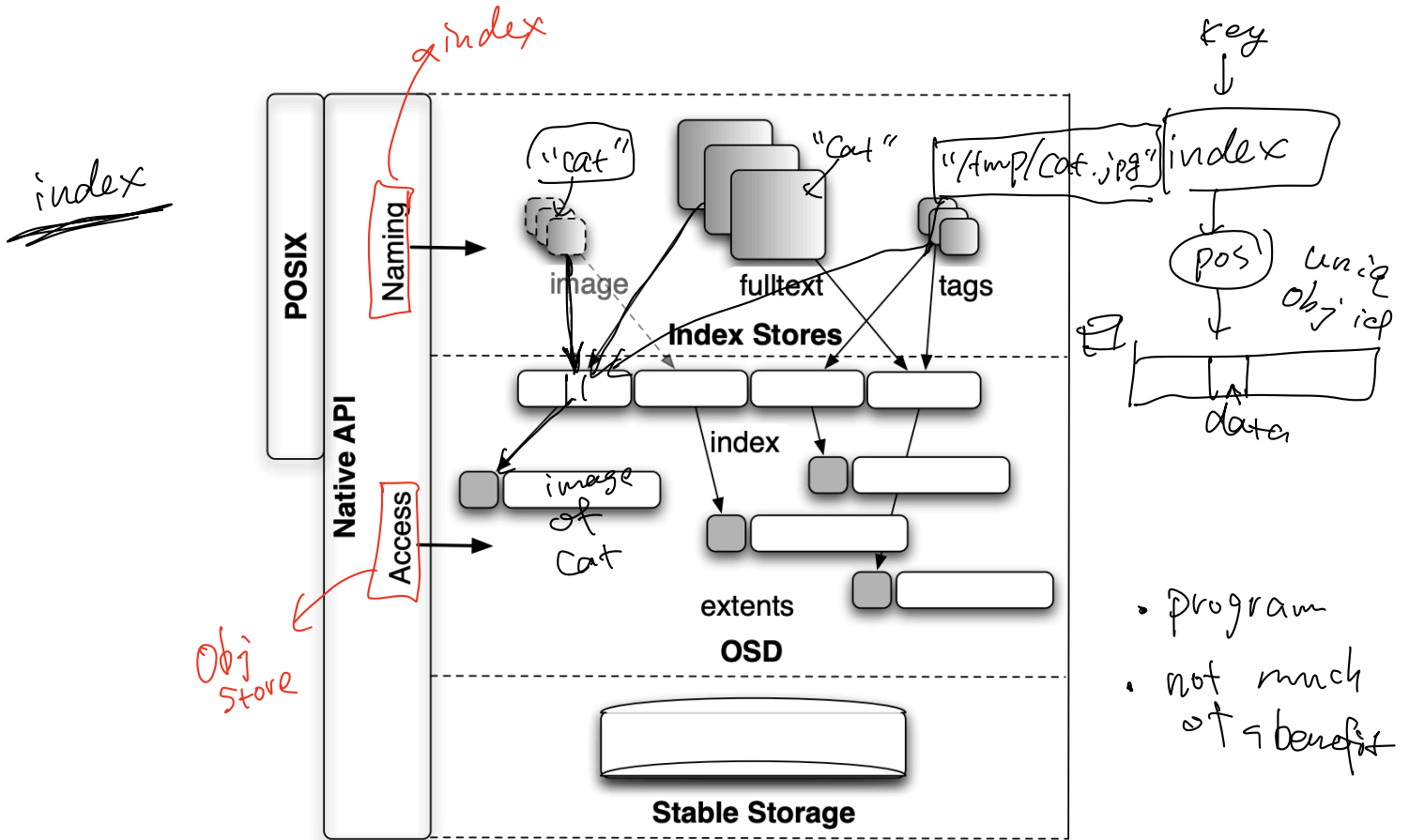
iii) "Google is a verb"

↓  
more files.

- files are siloed ⇒ a global namespace
- walk the hierarchy is expensive
- concurrency

→ /x/y/z  
→ /x/a/b

HEAD: <sup>tagged</sup> Search-based namespace



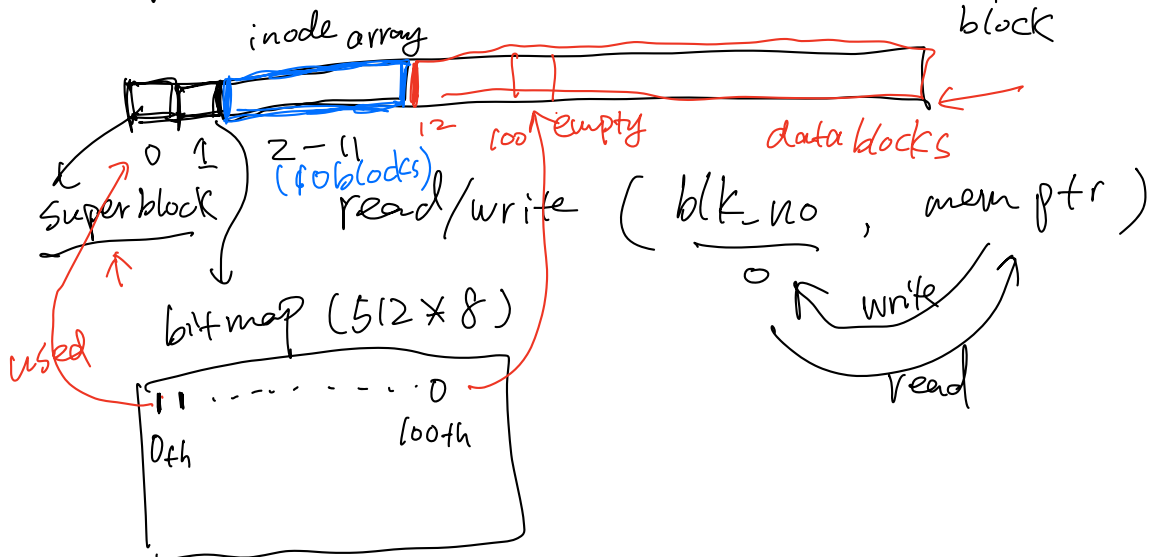
• lab 6.

• SD Card → disk

• abstraction

block: 512B

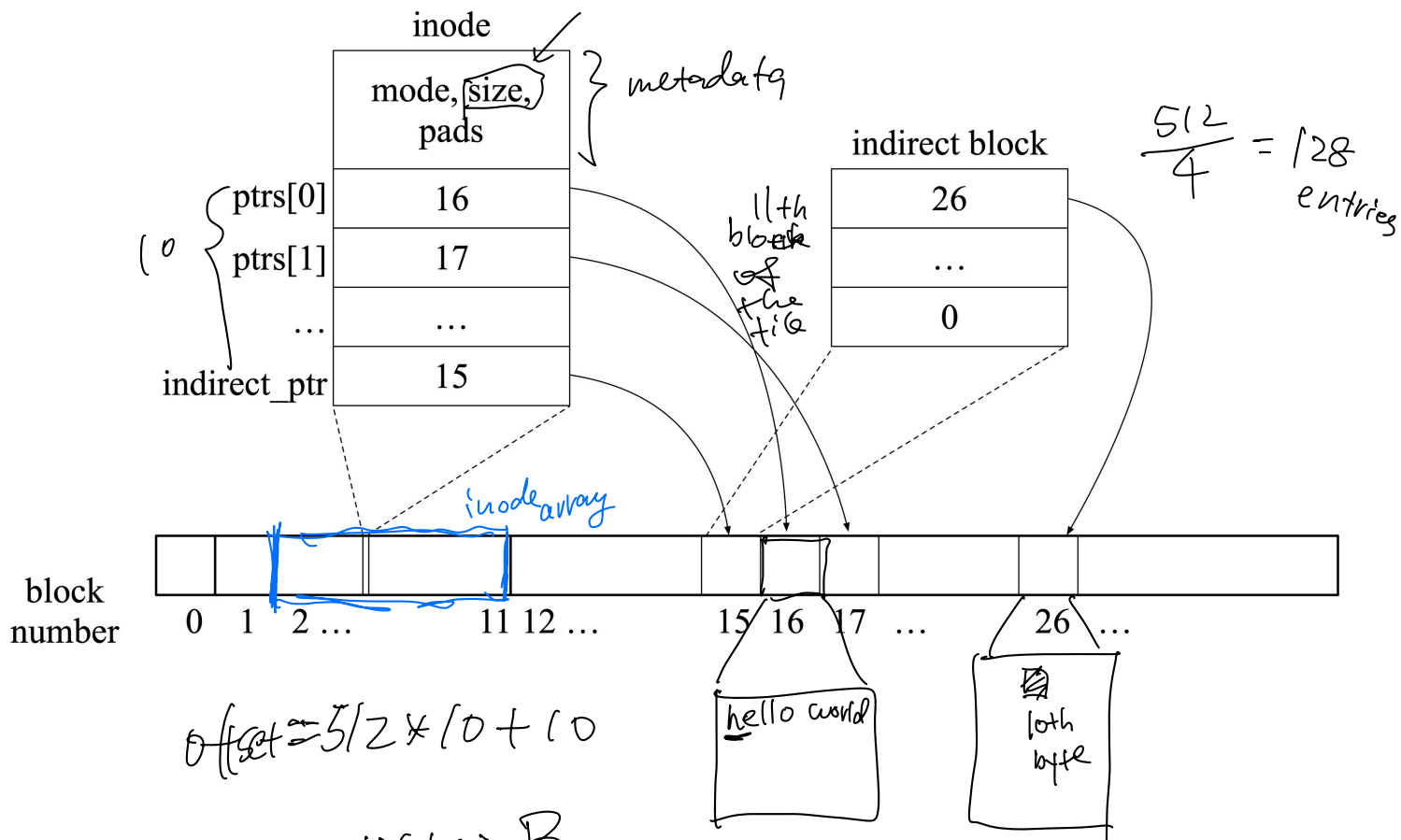
an array of ~~data~~ blocks



• file read/write

char\*

read ( inode, offset, len, buf )



$$\text{offset} = 512 * 10 + 10$$

$$(10 + 128) * 512 \text{ B}$$

$$\frac{10 * 512 \text{ B}}{64 \text{ B}} = \# \text{ files} + \# \text{ dirs}$$