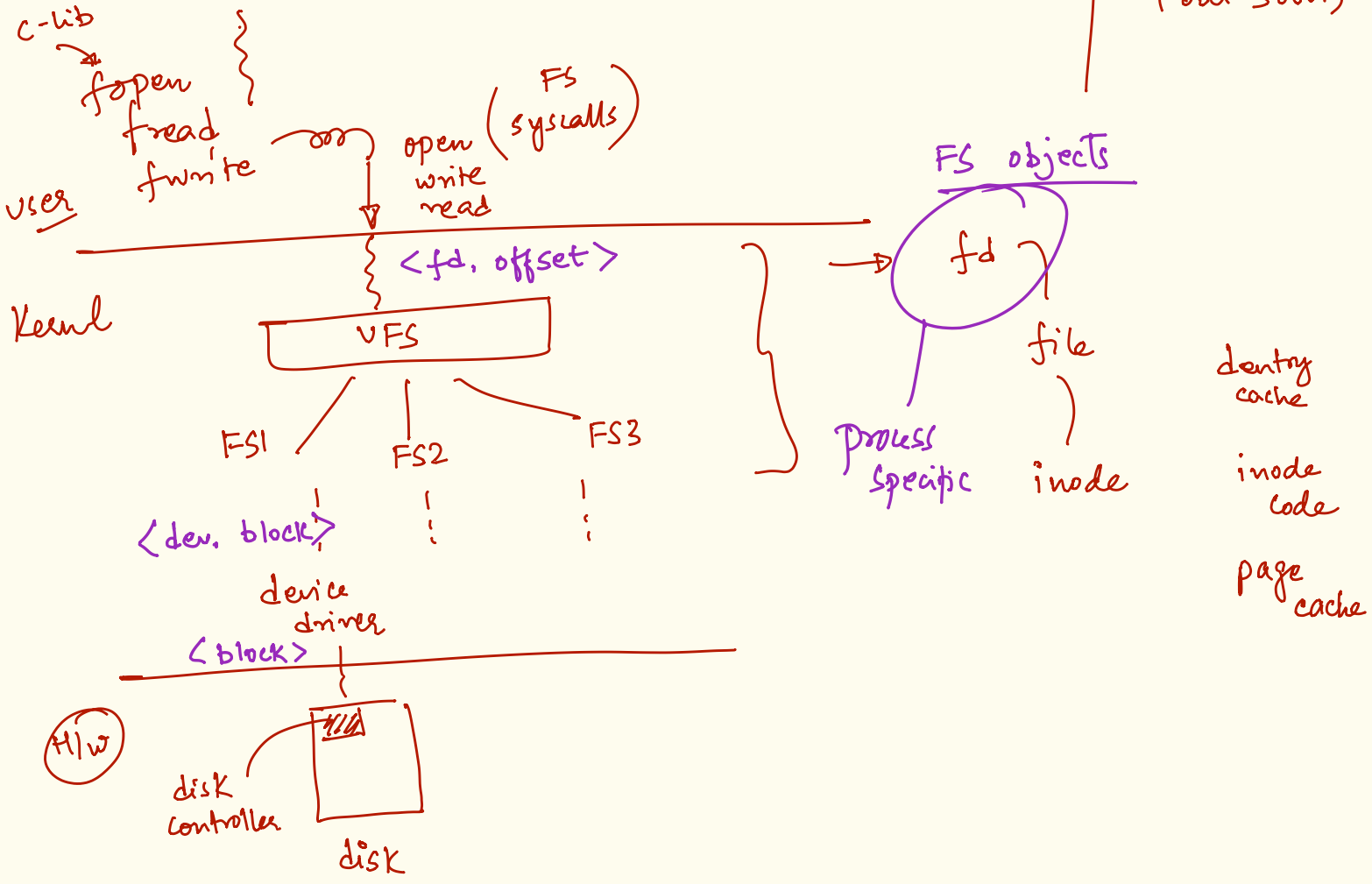
CS744 Lecture 20

File System & the file abstraction.

* Lab 4
* Lab 5 (out soon)



(*) directories. ~ directory - file listing.

filename1 — inodenum

filename2 — inodenum

filename3 — inodenum

listing of filenames inode numbers

stored as a file!

(*) every FS-managed disk is mounted on a mount point
- mapped to pre-defined inode
- path relative to the root directory.

/ — root directory
- has a specified mounted FS.

/ home / data / foo.txt

/ — directory (special file)
home — directory
data — directory
foo.txt — file

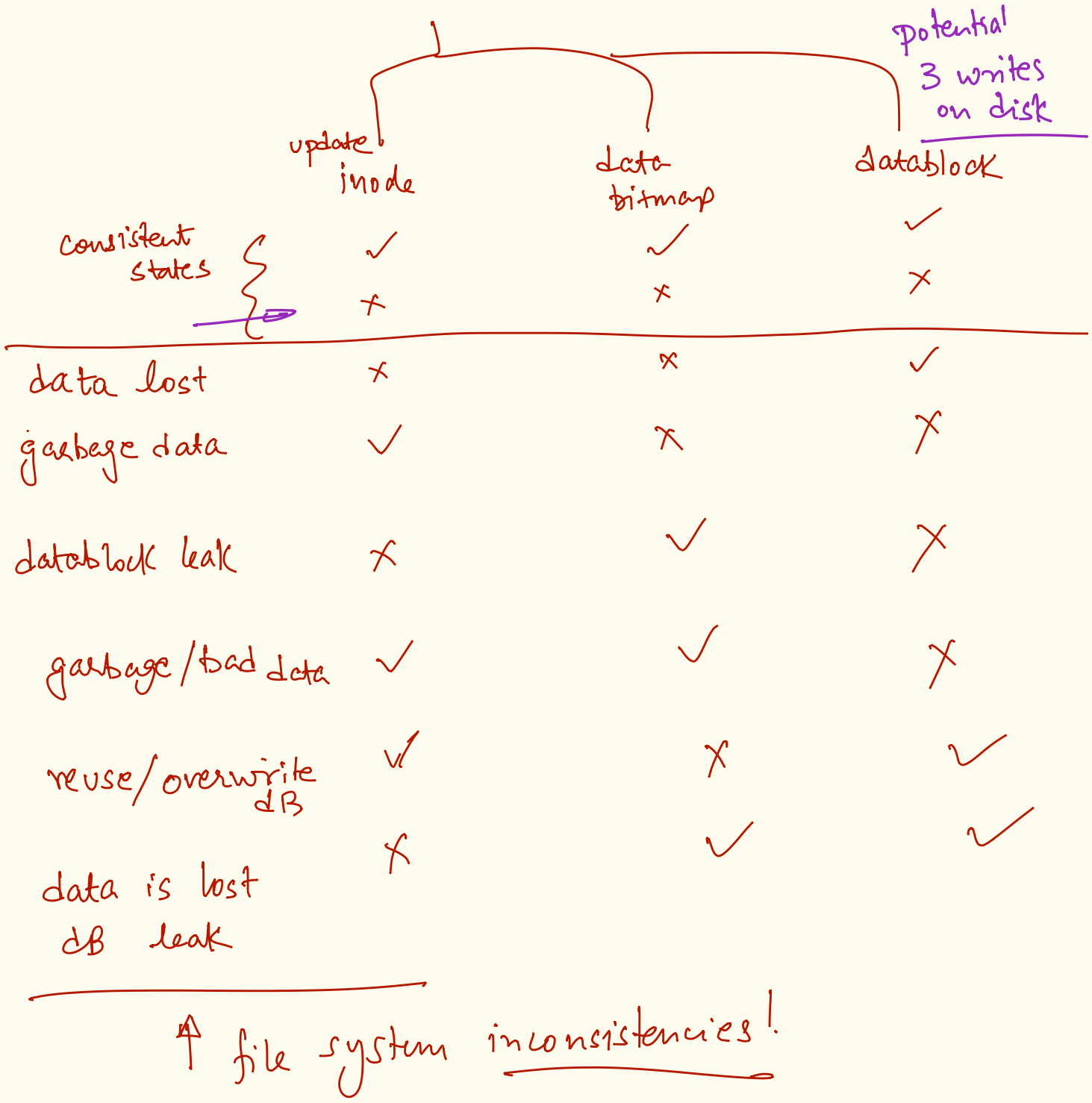
(#) Reliability | FS — file abstraction
- efficiency
- reliability
- consistency.

Consistency!

- write(fd, buffer, len);

potential 3 writes on disk

update inode	data bitmap	datablock
✓	✓	✓
×	×	×
×	×	✓



↑ file system inconsistencies!

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* fsck – file system check!
consistency

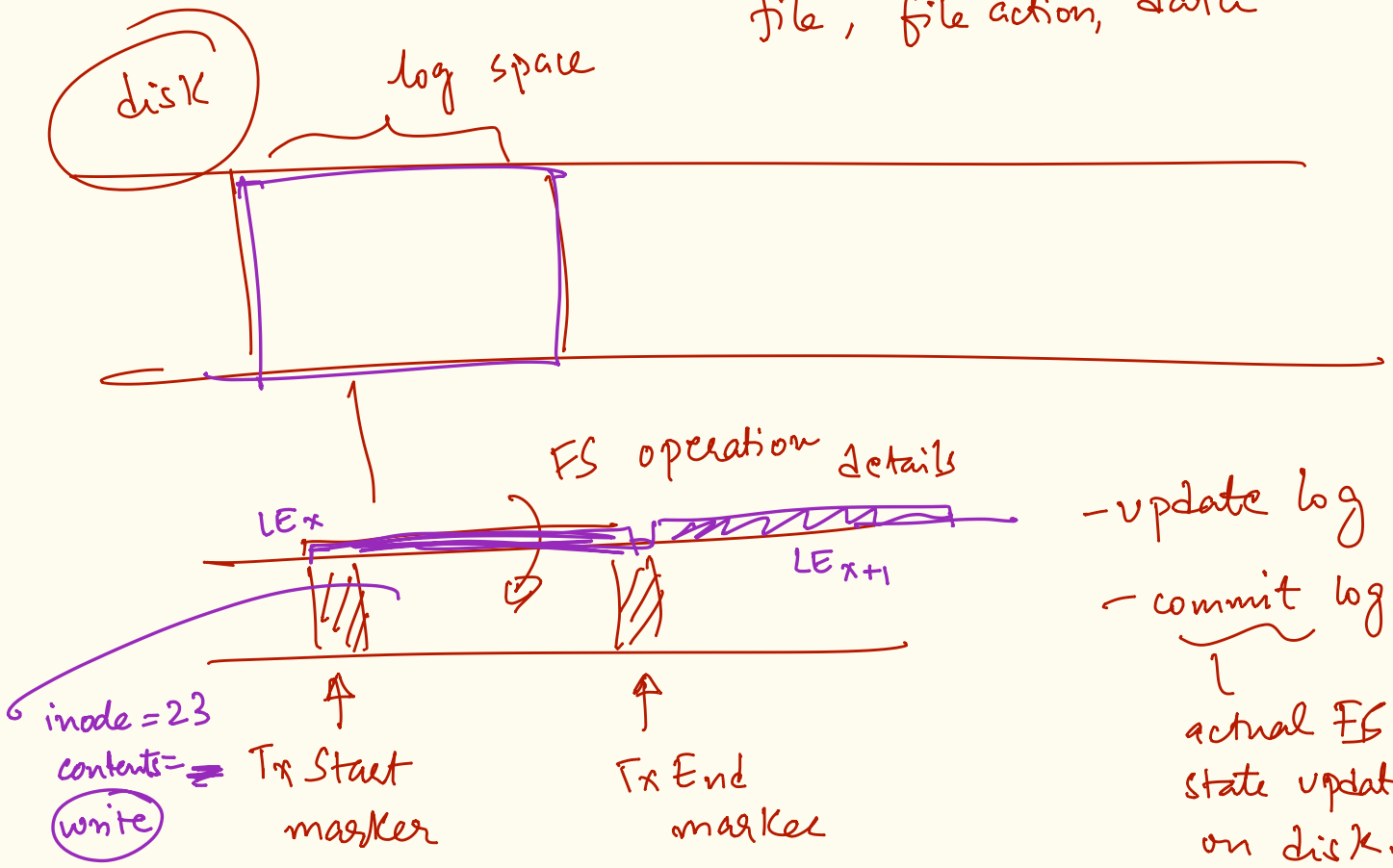
↳ offline tool
to check / fix(?) inconsistent state.

④ Journaling / log-based file systems.

idea: to log all transactions.

↳ set of file operations.

file, file action, data



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⑤ write followed by read will force a log commit !

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⑥ generalized / distributed FS !

- store metadata & data blocks on the network