

filesystem consistency

	inode	bitmap	data
inode	I	C	I
bitmap	C	I	I
data	I	I	C

1 write

inode: data bitmap says free but inode says used, read garbage

bitmap: data bitmap says block is used, but no inode points to it

data: data is written w/ no way to access (NONEXISTENT)

2 writes

inode & bitmap: reading block

contains garbage

inode & data: 2 metadata structures can't agree

bitmap data: no idea which file should contain data blocks

Solutions

-fsck(): scan for consistencies
-really slow

-Journaling = transactions
-atomic = happens / doesn't happen
-serializable = 1 after another
-durable = sticks after happening

Write ahead = writes to log as soon as a change is made

write behind = write to disk at a later time (asynchronous)

