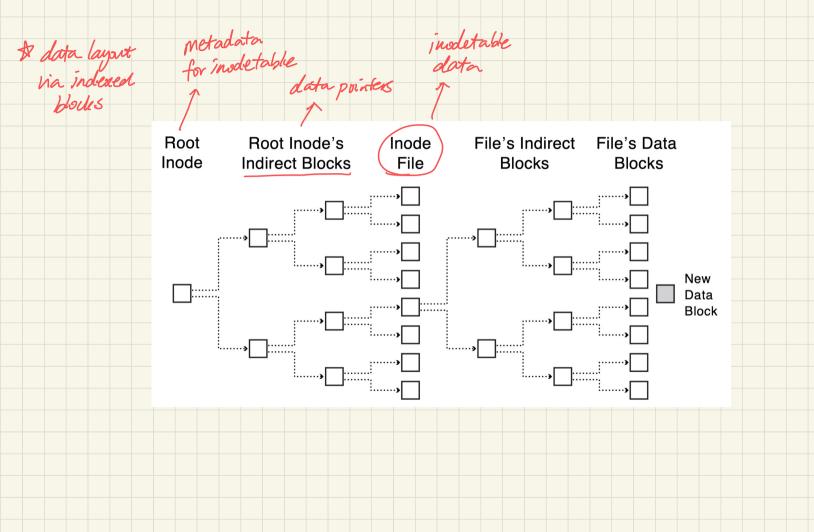
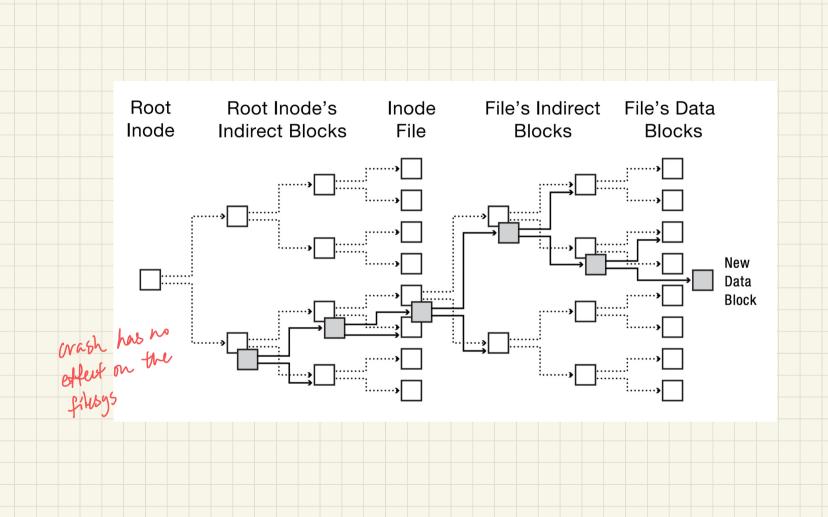
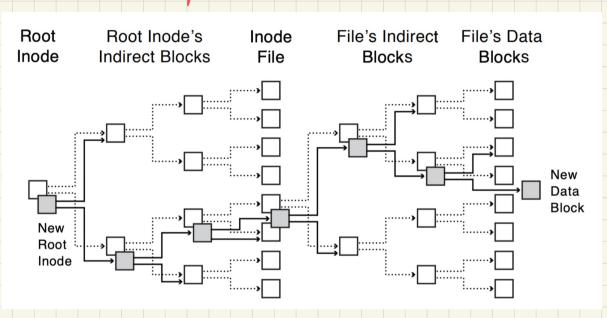
5/20/24 Transactions Wrapup de Logy on White FS many { tx begin of concurrent diffe unifes. can be reordered disk unites { tx-end c issned to barrier disk barrier disk barrier disk Transactions heerd from disk ( everything prior to barrier must complete fort) -> resolve the incomplete tran ( mite as part of ten\_end). -> compute a checlesum -> on revovery, validade committed exns' checksum before applying

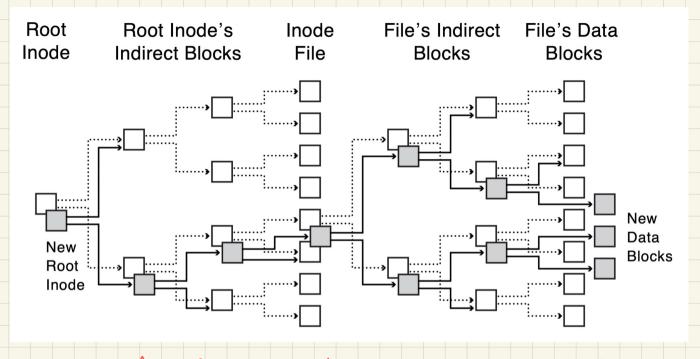
A Logging isn't the only way to achieve crash safety! Copy-on-wiste Filesys inum inode table reserved at fixed locaren -> ja place update : -> Cant overwrise data block
multiple disc blacks
atomically (txn & Journaling) dotta block actione crash consistering by uniting changes elsewhere first -> lopy-on-wise: - unite changed blocks to new locations -> once all new blocks are mitten, use a single disk unite to make all the new blocks is sible at once Is no fixed exation for almost all structures de data blocks, data de metadota locations drange after every aparte Cow Filesys -> recursive update problem: it directory entry stores around location of the metadata Name (block #) with logical pointer updoted pointer in a www system causes recurive updates! updated updated same indete, updated updasted parent dit data different block # use logical privater (Cinode #) indetable insole or track A regardes invole # to Wilk # translation! parent dix insole deflerent versions of indetable's mode in an superblack insdetable insde loc Luken changes updated insde become visible) fixed location Luken-changes become visible) instale superbock





-> bits of overhead (many blods to change for a single histe)





As provides wash safety would logging, but after times a log is still used to speed up fayou