Class: 27 Date: 11 **CSE 330: Operating Systems** Fall 2016 Note Title File Systems - inodes
- index & huchnes

inumber 0 -> root directory -> /

add, delete modify arba XYX XKX > renam bit -delete flag

free list - , bit vector

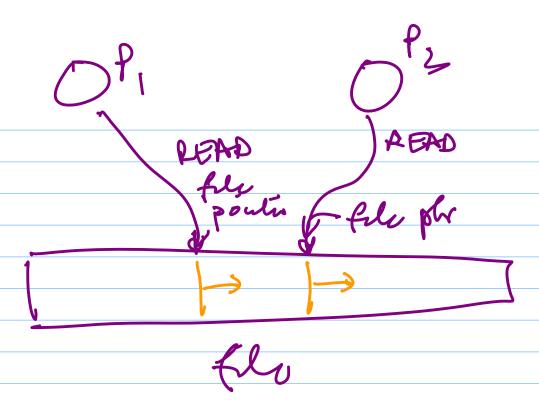
one large file -> linked list delete a fle (untinh) - delete dir enhy - add all bloche to free list Runtine Semanties

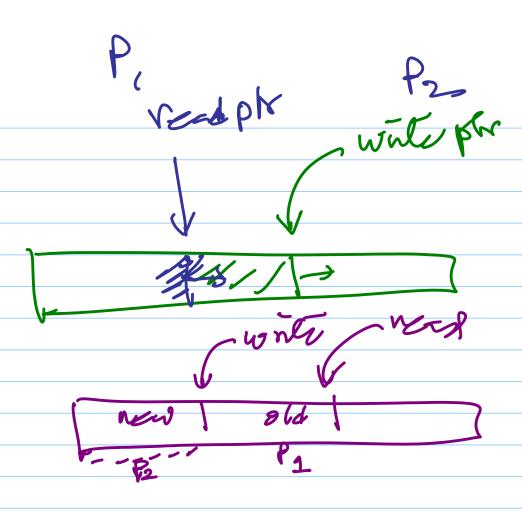
Apps

Kernel Filosoptem DD Plas.

DIEK

APPI (proceso)





Write with (Ps)

White file

exist

Concurrent R, W + delele

open

ve move from

directory

if inode ref count=0

Hen dele when do sed,

Consistency & recovery

Duffered in memory

(meta date + regular data)

— fail (power or coach)

Leads to com boss of data

unszen boss of data

(garbage) inconsistency \_\_ > vecovery Recovery fack Currisy filo system check (run on boot) check fin space inodes in directoris fond bet chains -..

journaling flu systems 1 (e.g. Linnx ext3, ext4.) updates to file system dates (meta + very is written to "journal" s log Log shuchwed file system

(3) the journal is the

file system (!)

Database flu systems

- combine log

- before and after image

- "commit" logs.

Protection

- Memory protection (boundaries)

- Clu protection (modes)

Access Control

Process rights

files have sweens 4 rights Gownes

Dwner - Al: Aaess conhol (Unip) owner = Alice group = AGroup TWX, TWX, TWX owner group other

process & owner open -s check Rechard permission cellineale pavent process (init)
has owner "root" > vid 0 con sociss myfl (normal)

Priv

exalation

system

onn > 4 verify

(manual)

setuid