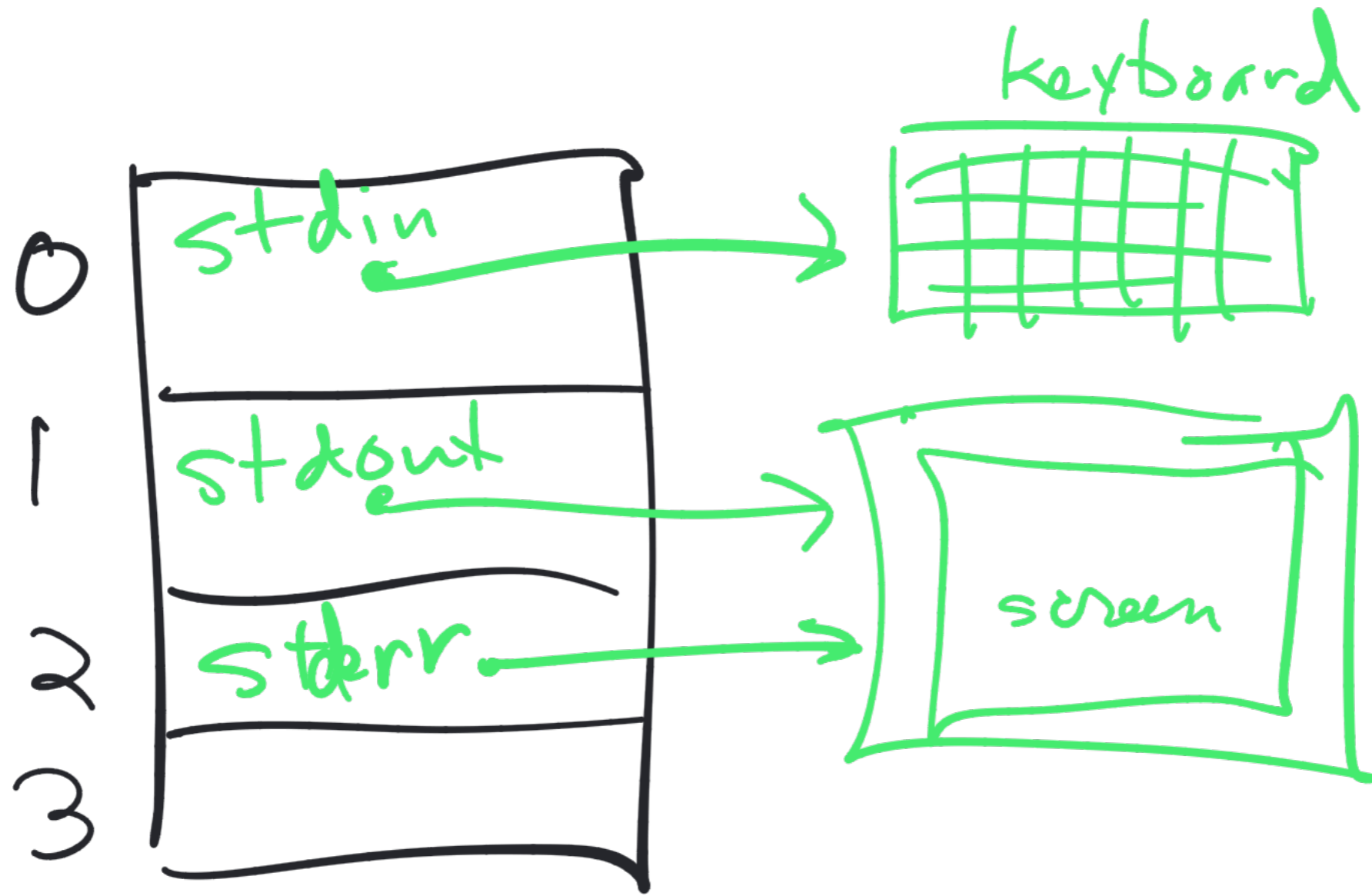
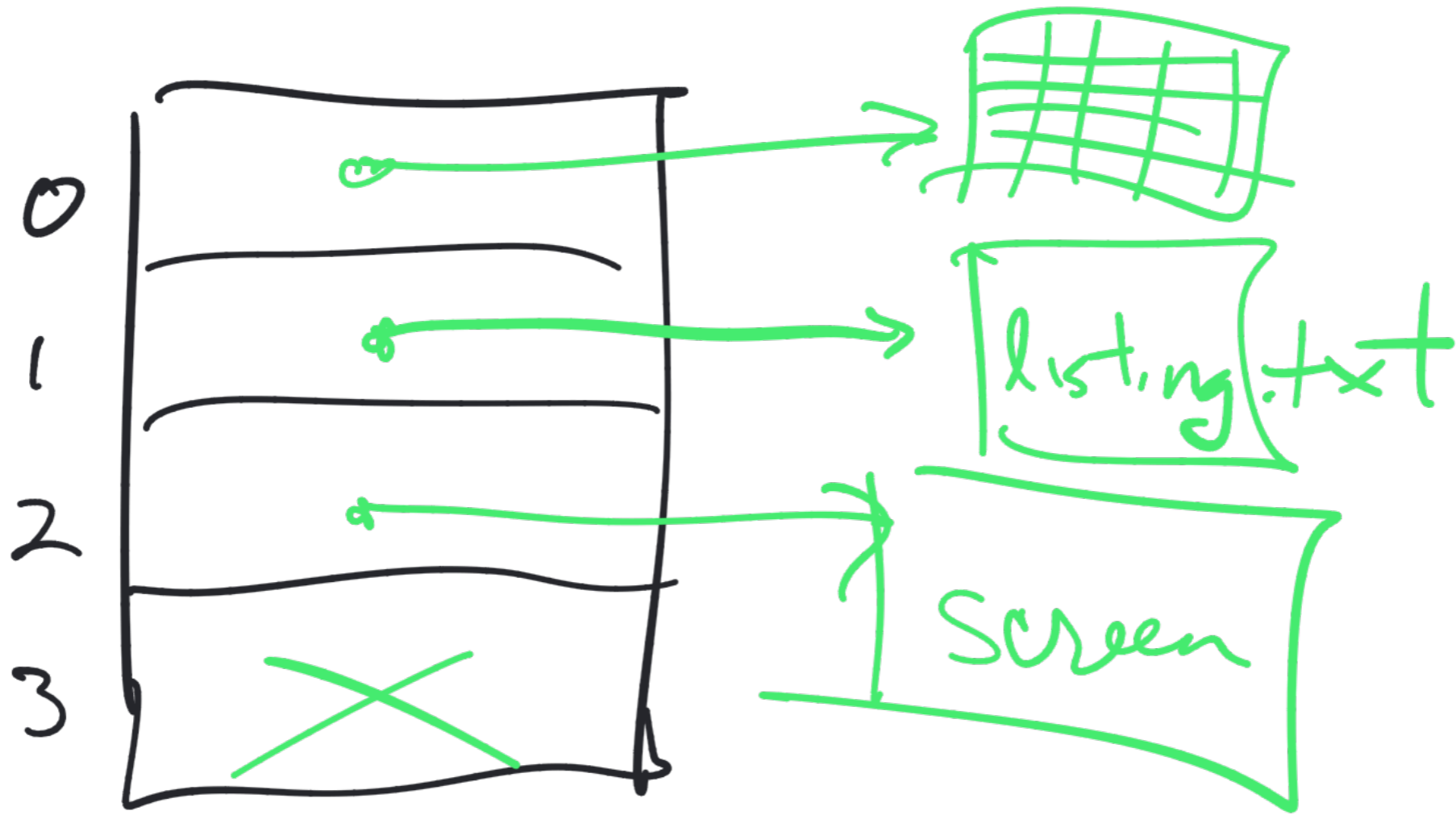


CS 208

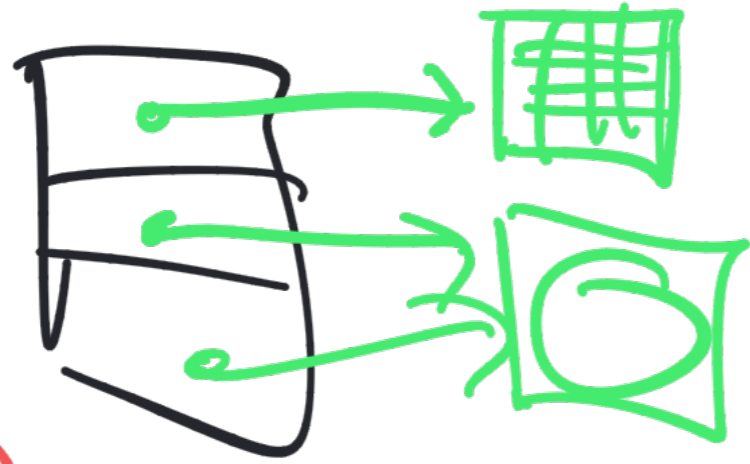
Mon, 6 Nov 2023



ls > listing.txt

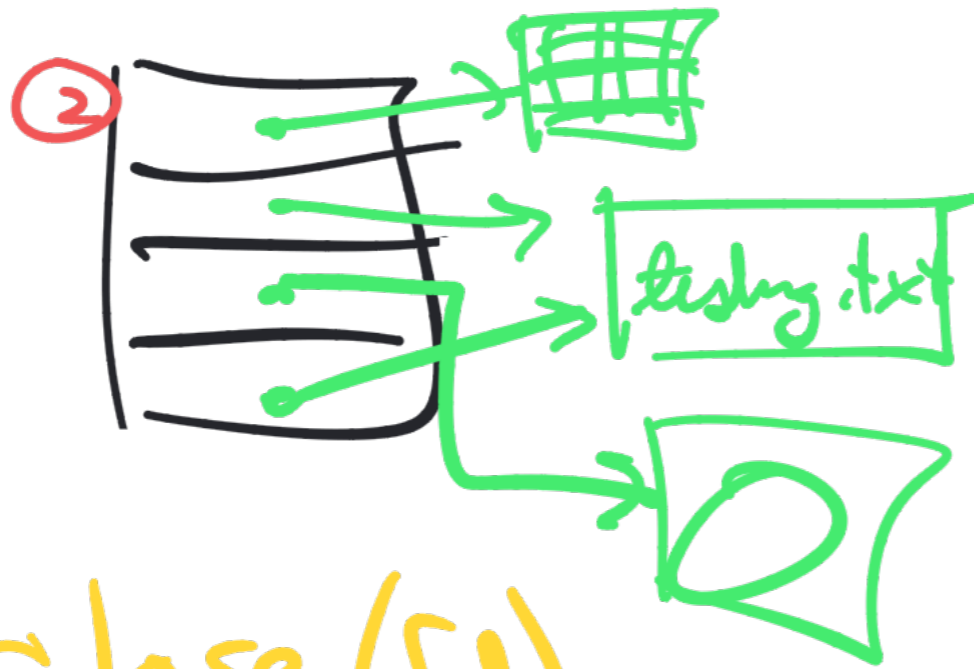


Want  
to  
end  
here

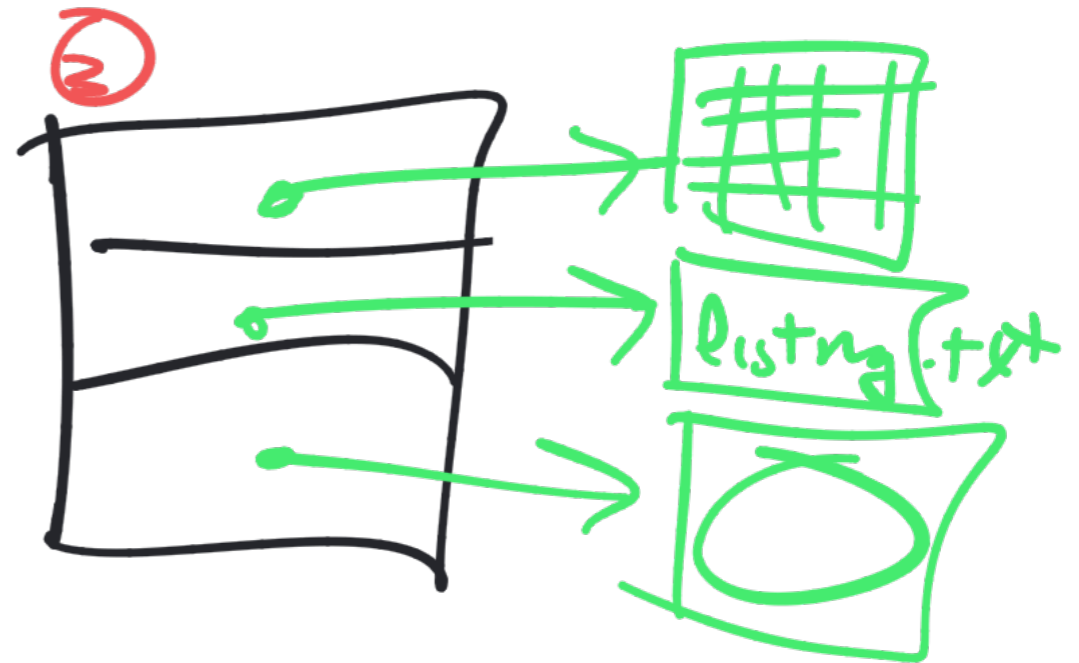
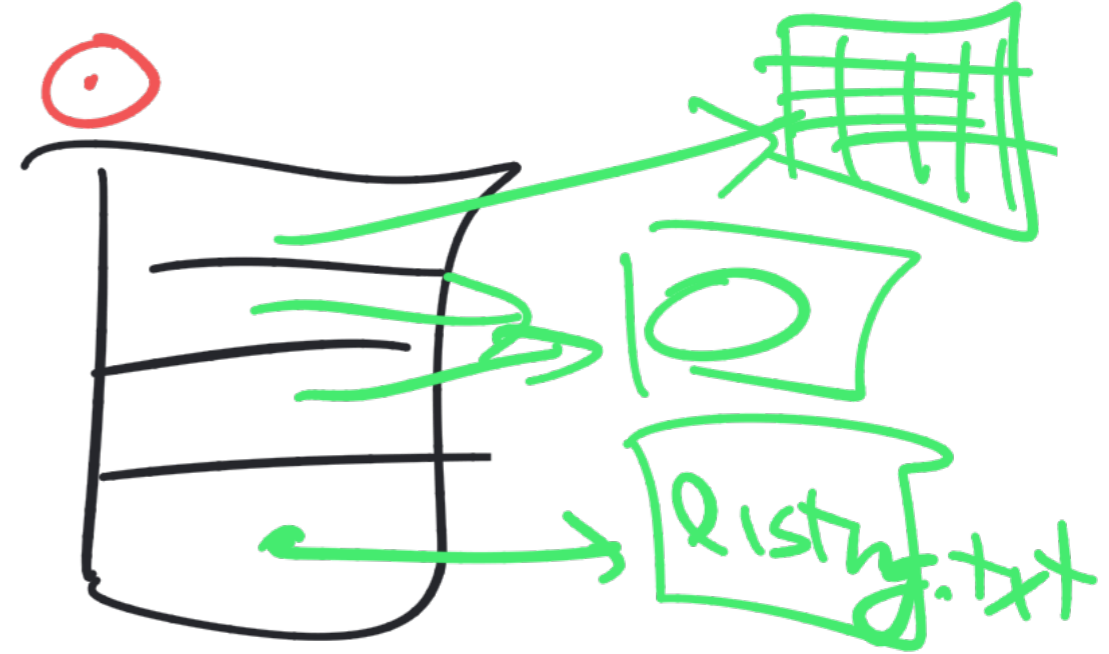


① `fd = open("listing.txt")`

② `dup(fd, 1)`

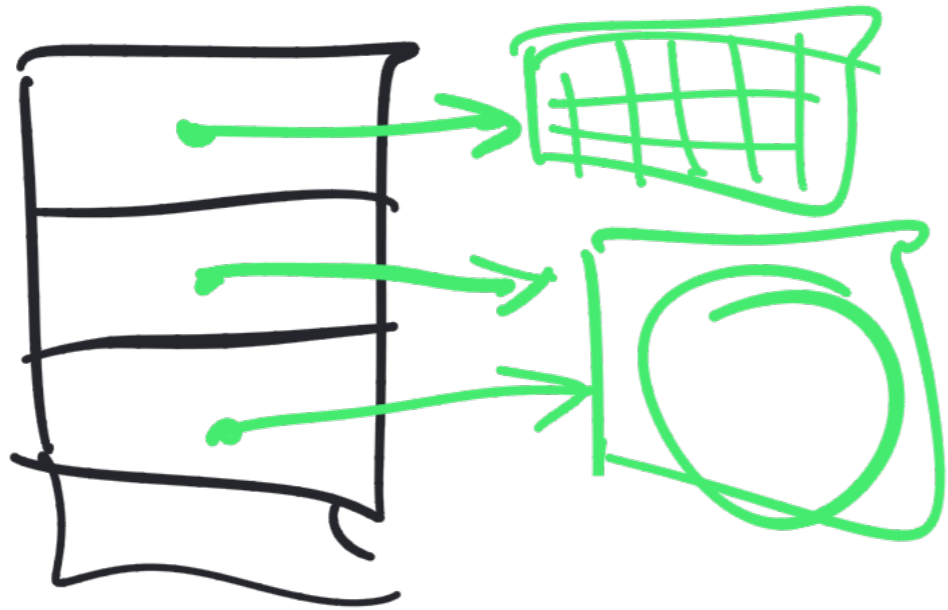


③ `close(fd)`

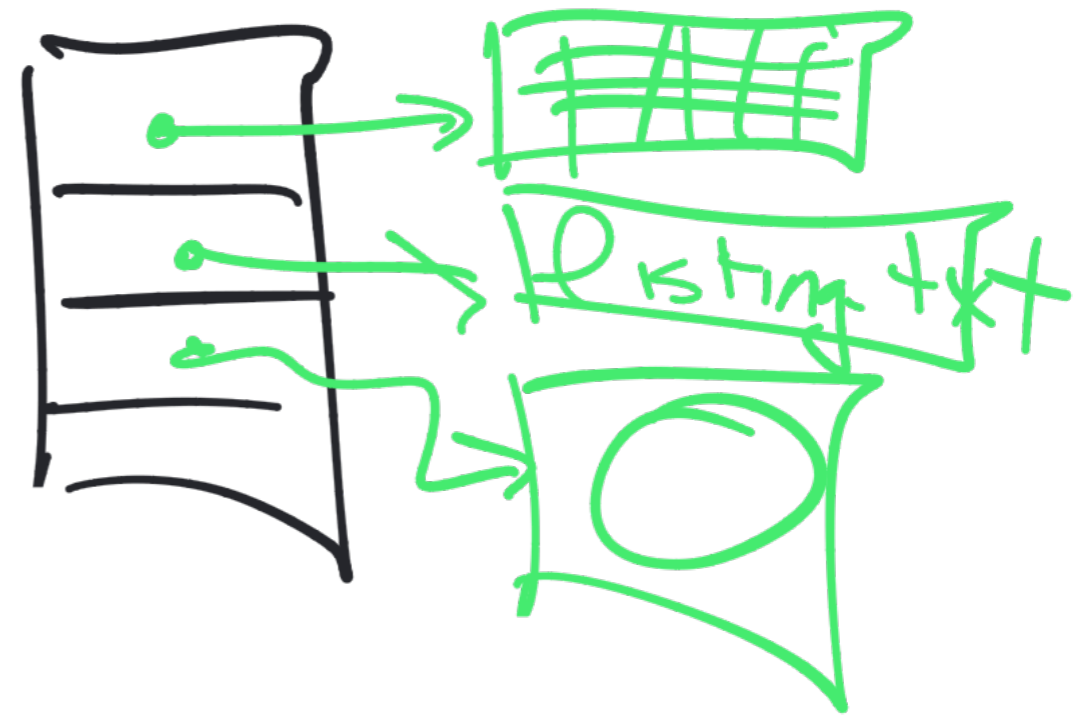


ls > listing.txt

Fd table for  
Parent (shell 208)

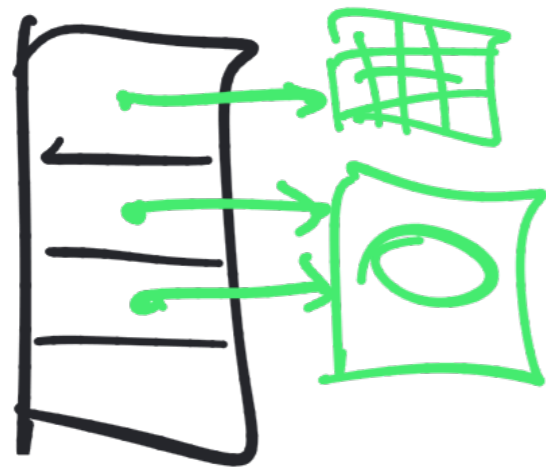


Fd table for  
child (ls)



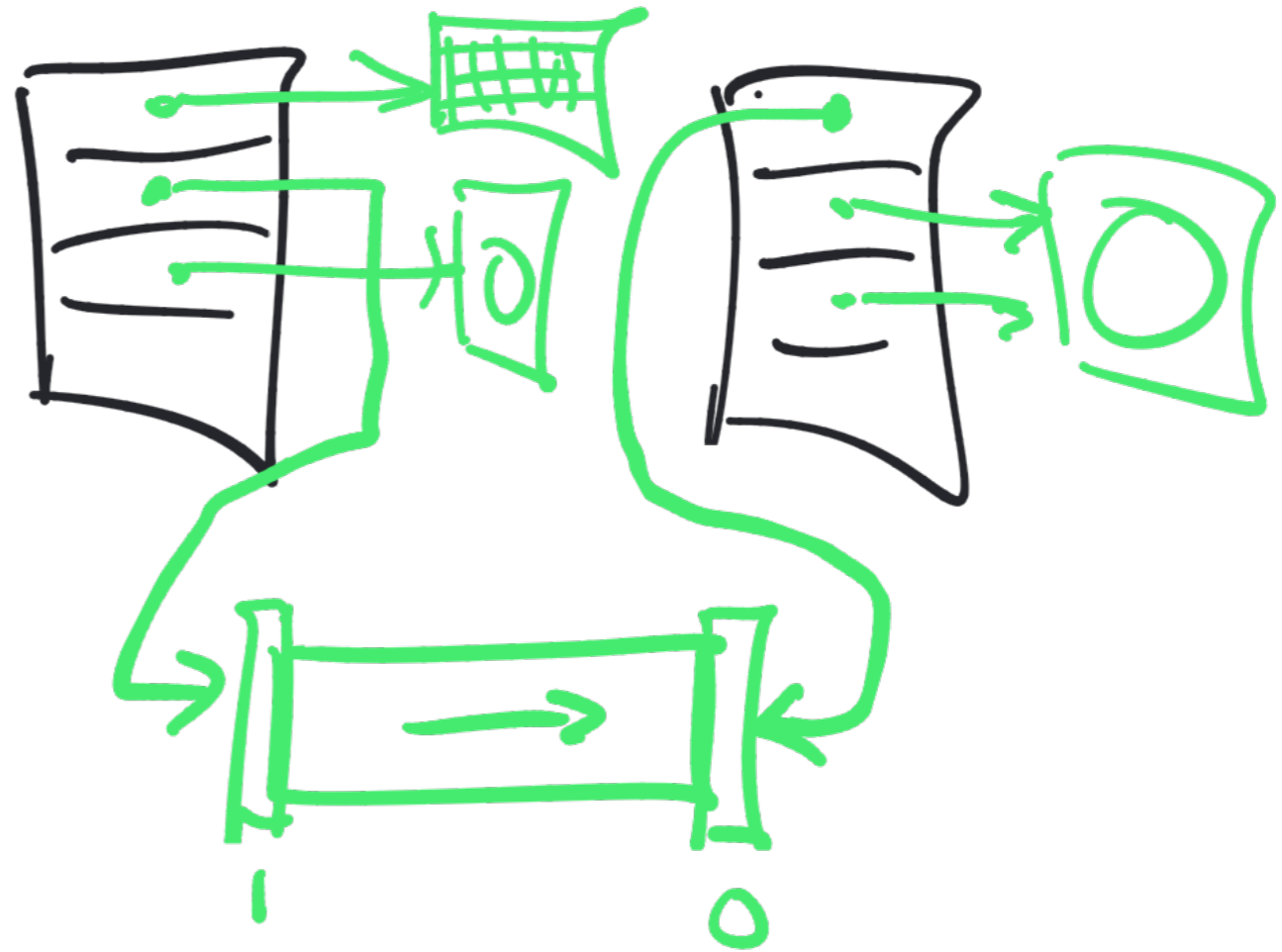
Pipe: `ls | wc -l`

Shell



ls

wc



Inside a pipe



buffer

ls writes to the buffer / wc reads from the buffer

IF ls fills the buffer, ls needs to sleep until there's more space in the buffer

IF wc empties the buffer, wc needs to sleep until ls puts more stuff in the buffer

# Option 1 for ls | wc -l

shell: fork

shell

wait

child: fork

child

exec(ls)

grandchild

exec(wc)

-



Option 2 : good

