CS 208
Mon, 6 Nov 2023
stdin → keyboard
stdout → screen
stderr
```
ls > listing.txt
```

<table>
<thead>
<tr>
<th>0</th>
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<th>2</th>
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Want to end here.
fd = open("listing.txt")
dup(fd, 1)
close(fd)
ls > listing.txt

FD Table for Parent (shell208)

FD Table for Child (ls)
Pipe: `ls | wc -l`
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

shell: fork
  shell: fork
    Shell
    wait
    wait
  child2
    exec(md)
child: exec(ls)