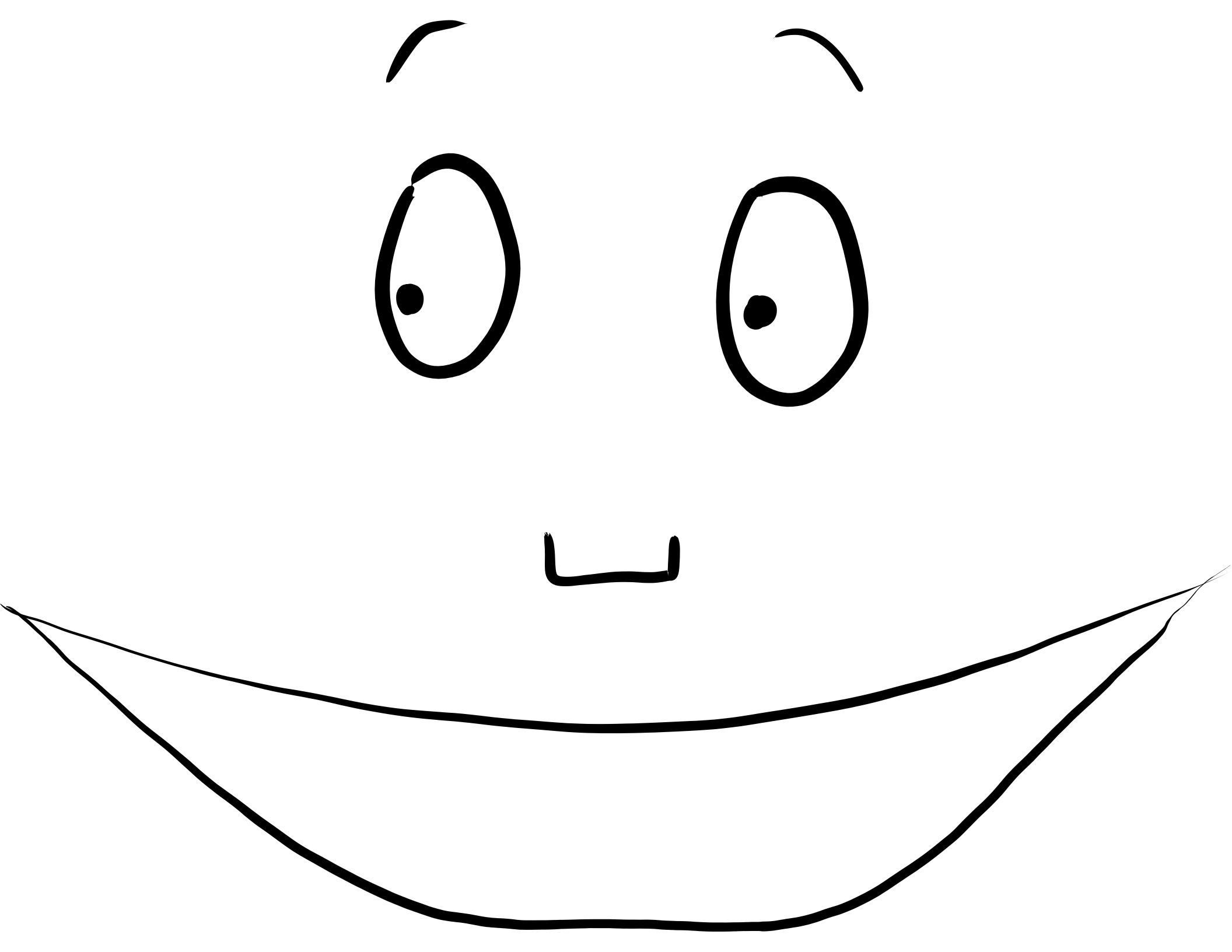
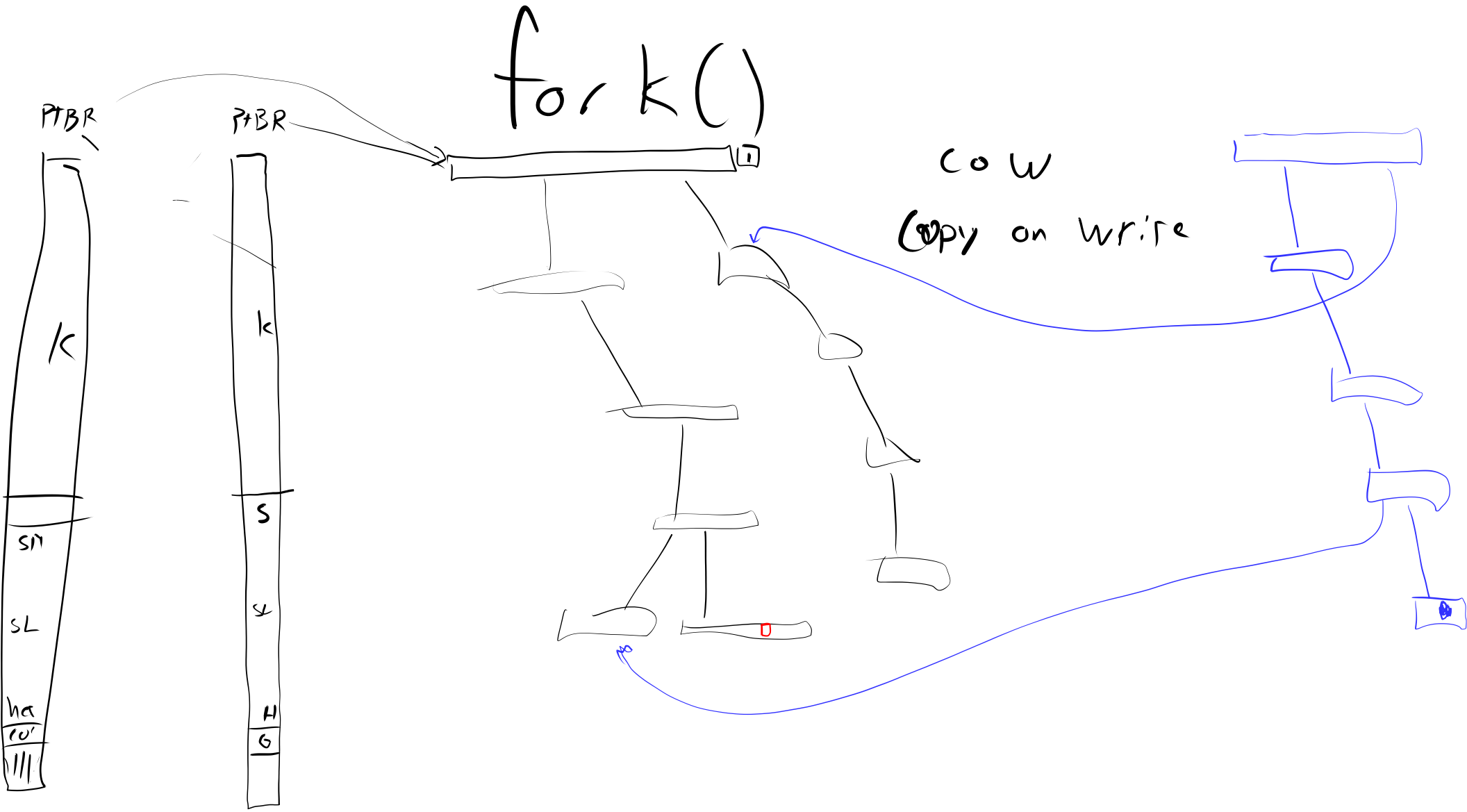
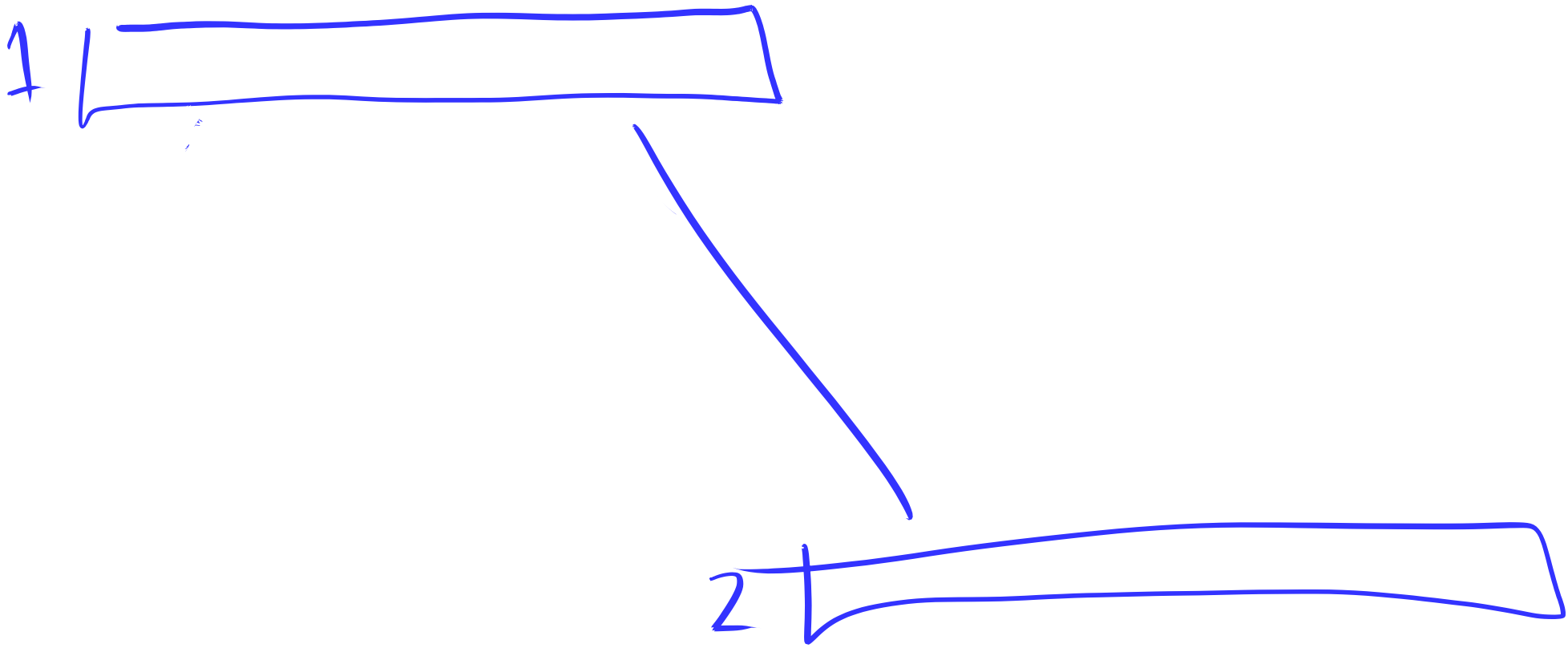
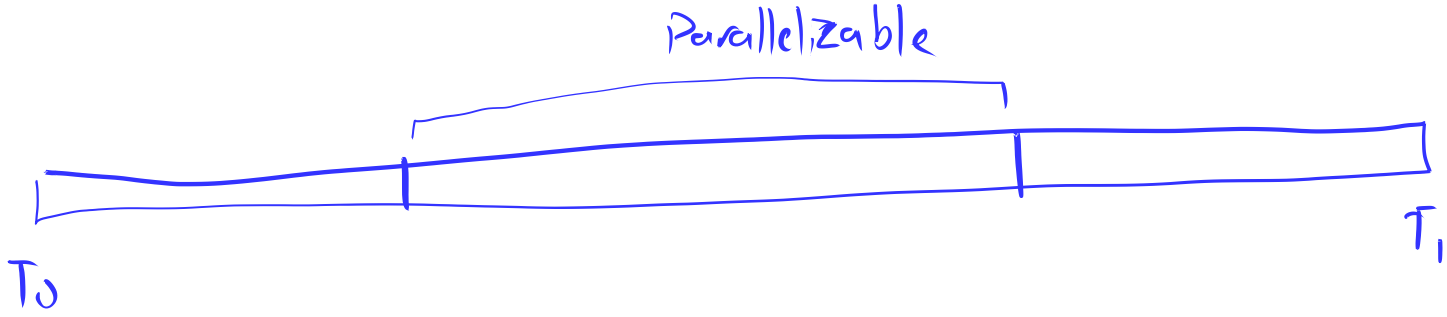



fork()
PTBR
PTBR
K
S
SL
K
S
H
G
COW
Copy on write


1
2

Amdahl's Law



$t_s = 5_s$

$t_p = 4_s$

$t_s + \frac{t_p}{\#Th} + \text{overhead}$

$1 = 9_s \quad S_s + \frac{4}{1}s$

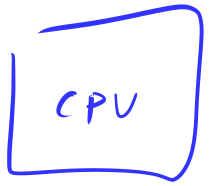
$2 = 7_s \quad S_s + \frac{4}{2}s$

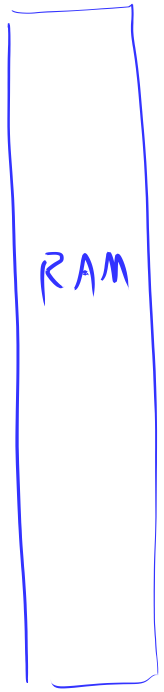
$19 = 5.2\ldots s \quad S + \frac{4}{19}s$

Synchronization

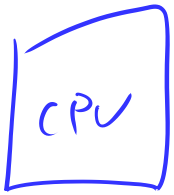
Start:
tmp = *x
y = tmp
z = fwk(tmp)
if (*x == y)
*x = z
else
goto start

Atomic
any reg-only op (trivial) - 1 CPU owns
read - 1 RAM cal owns
write - 1 RAM






```
if (*x == y)
    *x = z;
```



OS pause all other threads,
then do this,
then un-pause

OS no interrupts allowed

HW do check + assn in 1 cycle
OS make others wait on *x