Condition Variables and Thread Ordering

⇒ Fork/Join ✓
  (parent waits for child)
⇒ Producer/Consumer or Bounded Buffer

Producer(s):
- Producer(s)
- 3 threads
- put
- queue
- bounded aka fixed size
- atomicity, ordering

Consumer(s):
- Consumer(s)
- 3 threads
- get
- queue
- bounded aka fixed size
- atomicity, ordering

Examples:
- Unix pipe, MT web server (multi-threaded), etc.
- $ cat file.txt | wc -l

Excerpt:
- cat file.txt | wc -l
Solution v1

start "analysis":
1 producer,
1 consumer,
max = 1

Producer

Producer

Consumer

Producer

Consumer

\[ \text{max}=2 \]

[\text{numfull}=2]\]

P1
P2
P4
P5
P6
P2
P2
P3 (wait)

\[ \text{READY} \]

\[ \text{BLOCKED} \]

C1
C2
C4
C5 (signal)
C6

"v1"

1 producer

\[ \frac{v1}{1 \text{ producer,} \]

\[ 2 \text{ consumers} \]

wait queue

\[ \text{CV} \]

P X

\[ \text{CX} \]