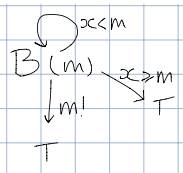
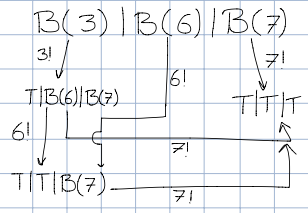
Eager auction

$B(m)$ = $m!$ terminate
or $x?$
if $x \geq m$ then terminate
else $B(m)$



Broadcasting

All states moves at the same time



Test and Set

A semaphore B -ish a SW- test and set.

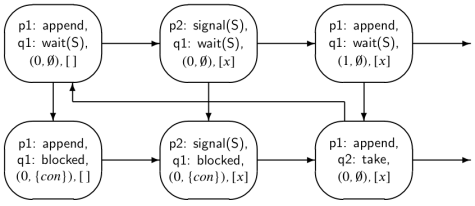
CS problem for n processes. See Alg 6.3: p 113, s 6.5
Mergesort for n processes. See Alg 6.5

Producer - Consumer

Algorithm 6.6: Producer-consumer (infinite buffer)

infinite queue of dataType buffer ← empty queue
semaphore notEmpty ← $(0, \emptyset)$

producer		consumer	
	dataType d		dataType d
	loop forever		loop forever
p1:	d ← produce	q1:	wait(notEmpty)
p2:	append(d, buffer)	q2:	d ← take(buffer)
p3:	signal(notEmpty)	q3:	consume(d)



Algorithm 6.8: Producer-consumer (finite buffer, semaphores)

finite queue of dataType buffer ← empty queue
semaphore notEmpty ← $(0, \emptyset)$
semaphore notFull ← $(N, \emptyset)$

producer		consumer	
	dataType d		dataType d
	loop forever		loop forever
p1:	d ← produce	q1:	wait(notEmpty)
p2:	wait(notFull)	q2:	d ← take(buffer)
p3:	append(d, buffer)	q3:	signal(notFull)
p4:	signal(notEmpty)	q4:	consume(d)

Monitors

Algorithm 7.1: Atomicity of monitor operations

```
monitor CS
    integer n ← 0

    operation increment
        integer temp
        temp ← n
        n ← temp + 1
```

p		q	
p1:	CS.increment	q1:	CS.increment