

Wsq_reduced_tso_tests

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p = push(), t = take(), s = steal(), || = processes run in parallel

```
proctype process1 (chan ch){
    push(999);
}
```

```
spin -a wsq_reduced_tso.pml
```

```
gcc -DMEMLIM=1024 -O2 -DXUSAFE -DSAFETY -DNOCLAIM -w -o pan pan.c
```

```
./pan -m10000 -n
```

```
(Spin Version 6.2.4 -- 8 March 2013)
```

```
+ Partial Order Reduction
```

Full statespace search for:

```
never claim          - (not selected)
assertion violations  +
cycle checks          - (disabled by -DSAFETY)
invalid end states    +
```

State-vector 428 byte, depth reached 218, errors: 0

175 states, stored

53 states, matched

228 transitions (= stored+matched)

856 atomic steps

hash conflicts: 0 (resolved)

Stats on memory usage (in Megabytes):

```
0.076    equivalent memory usage for states (stored*(State-vector + overhead))
0.222    actual memory usage for states
128.000   memory used for hash table (-w24)
0.534    memory used for DFS stack (-m10000)
128.730   total actual memory usage
```

pan: elapsed time 0 seconds

No errors found -- did you verify all claims?

3

```
proctype process1 (chan ch){  
    take();  
}
```

```
spin -a wsq_reduced_tso.pml  
gcc -DMEMLIM=1024 -O2 -DXUSAFE -DSAFETY -DNOCLAIM -w -o pan pan.c  
./pan -m10000 -n -c1  
Pid: 5976
```

(Spin Version 6.2.4 -- 8 March 2013)
+ Partial Order Reduction

Full statespace search for:

never claim	- (not selected)
assertion violations	+
cycle checks	- (disabled by -DSAFETY)
invalid end states	+

State-vector 380 byte, depth reached 130, errors: 0

96 states, stored

36 states, matched

132 transitions (= stored+matched)

469 atomic steps

hash conflicts: 0 (resolved)

Stats on memory usage (in Megabytes):

0.037	equivalent memory usage for states (stored*(State-vector + overhead))
0.234	actual memory usage for states
128.000	memory used for hash table (-w24)
0.534	memory used for DFS stack (-m10000)
128.730	total actual memory usage

pan: elapsed time 0 seconds

No errors found -- did you verify all claims?

```

proctype process1 (chan ch){
    push(555);           //with initial queue size of 1,
                        //so queue needs to be enlarged by expand()
    push(999);
}

```

```

spin -a wsq_reduced_tso.pml
gcc -DMEMLIM=1024 -O2 -DXUSAFE -DSAFETY -DNOCLAIM -w -o pan pan.c
./pan -m10000 -n -c1
Pid: 6250

```

(Spin Version 6.2.4 -- 8 March 2013)
 + Partial Order Reduction

Full statespace search for:

never claim	- (not selected)
assertion violations	+
cycle checks	- (disabled by -DSAFETY)
invalid end states	+

State-vector 636 byte, depth reached 1319, errors: 0

2349 states, stored

1143 states, matched

3492 transitions (= stored+matched)

25828 atomic steps

hash conflicts: 0 (resolved)

Stats on memory usage (in Megabytes):

1.487	equivalent memory usage for states (stored*(State-vector + overhead))
1.654	actual memory usage for states
128.000	memory used for hash table (-w24)
0.534	memory used for DFS stack (-m10000)
130.097	total actual memory usage

pan: elapsed time 0.02 seconds

No errors found -- did you verify all claims?

5

```
proctype process1 (chan ch){  
    push(999);  
    take();  
}
```

```
spin -a wsq_reduced_tso.pml  
gcc -DMEMLIM=1024 -O2 -DXUSAFE -DSAFETY -DNOCLAIM -w -o pan pan.c  
./pan -m10000 -n  
Pid: 5128
```

(Spin Version 6.2.4 -- 8 March 2013)
+ Partial Order Reduction

Full statespace search for:

never claim	- (not selected)
assertion violations	+
cycle checks	- (disabled by -DSAFETY)
invalid end states	+

State-vector 468 byte, depth reached 479, errors: 0

531 states, stored

211 states, matched

742 transitions (= stored+matched)

3813 atomic steps

hash conflicts: 0 (resolved)

Stats on memory usage (in Megabytes):

0.251	equivalent memory usage for states (stored*(State-vector + overhead))
0.393	actual memory usage for states
128.000	memory used for hash table (-w24)
0.534	memory used for DFS stack (-m10000)
128.925	total actual memory usage

pan: elapsed time 0 seconds

No errors found -- did you verify all claims?

6

```
proctype process1 (chan ch){
    push(999);
    take();
}
```

```
proctype process2 (chan ch){
    steal();
}
```

```
spin -a wsq_reduced_tso.pml
gcc -DMEMLIM=1024 -O2 -DXUSAFE -DSAFETY -DNOCLAIM -w -o pan pan.c
./pan -m10000 -n
Pid: 5184
```

(Spin Version 6.2.4 -- 8 March 2013)
+ Partial Order Reduction

Full statespace search for:

never claim	- (not selected)
assertion violations	+
cycle checks	- (disabled by -DSAFETY)
invalid end states	+

State-vector 644 byte, depth reached 579, errors: 0

132569 states, stored

177792 states, matched

310361 transitions (= stored+matched)

1353132 atomic steps

hash conflicts: 266 (resolved)

Stats on memory usage (in Megabytes):

84.959 equivalent memory usage for states (stored*(State-vector + overhead))

76.742 actual memory usage for states (compression: 90.33%)

state-vector as stored = 579 byte + 28 byte overhead

128.000 memory used for hash table (-w24)

0.534 memory used for DFS stack (-m10000)

204.901 total actual memory usage

pan: elapsed time 0.93 seconds

No errors found -- did you verify all claims?

7

```
proctype process1 (chan ch){  
    take();  
    push(999);  
    take();  
}
```

```
proctype process2 (chan ch){  
    steal();  
}
```

```
spin -a wsq_reduced_tso.pml  
gcc -DMEMLIM=1024 -O2 -DXUSAFE -DSAFETY -DNOCLAIM -w -o pan pan.c  
./pan -m10000 -n  
Pid: 5323
```

(Spin Version 6.2.4 -- 8 March 2013)
+ Partial Order Reduction

Full statespace search for:

never claim	- (not selected)
assertion violations	+
cycle checks	- (disabled by -DSAFETY)
invalid end states	+

State-vector 684 byte, depth reached 851, errors: 0

412330 states, stored

582758 states, matched

995088 transitions (= stored+matched)

5102877 atomic steps

hash conflicts: 3154 (resolved)

Stats on memory usage (in Megabytes):

279.979 equivalent memory usage for states (stored*(State-vector + overhead))

255.176 actual memory usage for states (compression: 91.14%)

state-vector as stored = 621 byte + 28 byte overhead

128.000 memory used for hash table (-w24)

0.534 memory used for DFS stack (-m10000)

383.612 total actual memory usage

pan: elapsed time 3.05 seconds

No errors found -- did you verify all claims?

```

proctype process1 (chan ch){
    push(555);
    take();
    push(999);
    take();
}

```

```

proctype process2 (chan ch){
    steal();
}

```

```

spin -a wsq_reduced_tso.pml
gcc -DMEMLIM=1024 -O2 -DXUSAFE -DSAFETY -DNOCLAIM -w -o pan pan.c
./pan -m10000 -n
Pid: 5406

```

(Spin Version 6.2.4 -- 8 March 2013)
+ Partial Order Reduction

Full statespace search for:

never claim	- (not selected)
assertion violations	+
cycle checks	- (disabled by -DSAFETY)
invalid end states	+

State-vector 780 byte, depth reached 1075, errors: 0

941862 states, stored

1272249 states, matched

2214111 transitions (= stored+matched)

10347620 atomic steps

hash conflicts: 15735 (resolved)

Stats on memory usage (in Megabytes):

725.770 equivalent memory usage for states (stored*(State-vector + overhead))

662.652 actual memory usage for states (compression: 91.30%)

state-vector as stored = 710 byte + 28 byte overhead

128.000 memory used for hash table (-w24)

0.534 memory used for DFS stack (-m10000)

790.546 total actual memory usage

pan: elapsed time 7.17 seconds

No errors found -- did you verify all claims?


```
proctype process1 (chan ch){
    push(555);
    take();
    push(999);
    take();
}
```

```
proctype process2 (chan ch){
    steal();
    steal();
}
```

needs to be checked with -DCOLLAPSE instruction

```
spin -a wsq_reduced_tso.pml
gcc -DMEMLIM=1024 -O2 -DCOLLAPSE -DXUSAFE -DSAFETY -DNOCLAIM -w -o pan
pan.c
./pan -m10000 -n
Pid: 5514
(Spin Version 6.2.4 -- 8 March 2013)
    + Partial Order Reduction
    + Compression
```

Full statespace search for:

never claim	- (not selected)
assertion violations	+
cycle checks	- (disabled by -DSAFETY)
invalid end states	+

State-vector 820 byte, depth reached 1200, errors: 0

12063199 states, stored

17422205 states, matched

29485404 transitions (= stored+matched)

1.5179445e+08 atomic steps

hash conflicts: 3468526 (resolved)

Stats on memory usage (in Megabytes):

9755.700 equivalent memory usage for states (stored*(State-vector + overhead))

503.400 actual memory usage for states (compression: 5.16%)

state-vector as stored = 16 byte + 28 byte overhead

128.000 memory used for hash table (-w24)

0.534 memory used for DFS stack (-m10000)

631.757 total actual memory usage

nr of templates: [0:globals 1:chans 2:procs]

collapse counts: [0:54196 2:20299 3:807 4:3415 5:12]

pan: elapsed time **133** seconds

No errors found -- did you verify all claims?

```
proctype process1 (chan ch){
    push(555);
    push(999);
    take();
}
```

```
proctype process2 (chan ch){
    steal();
}
```

```
spin -a wsq_reduced_tso.pml
```

```
gcc -DMEMLIM=1024 -O2 -DXUSAFE -DSAFETY -DNOCLAIM -w -o pan pan.c
```

```
./pan -m10000 -n -c1
```

```
Pid: 5632
```

(Spin Version 6.2.4 -- 8 March 2013)
+ Partial Order Reduction

Full statespace search for:

never claim	- (not selected)
assertion violations	+
cycle checks	- (disabled by -DSAFETY)
invalid end states	+

State-vector 740 byte, depth reached 947, errors: 0

516861 states, stored

704261 states, matched

1221122 transitions (= stored+matched)

5966444 atomic steps

hash conflicts: 4694 (resolved)

Stats on memory usage (in Megabytes):

378.560 equivalent memory usage for states (stored*(State-vector + overhead))

343.991 actual memory usage for states (compression: 90.87%)

state-vector as stored = 670 byte + 28 byte overhead

128.000 memory used for hash table (-w24)

0.534 memory used for DFS stack (-m10000)

472.187 total actual memory usage

pan: elapsed time **3.84** seconds

No errors found -- did you verify all claims?

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```
proctype process1 (chan ch){
    push(555);
    take();
}

proctype process2 (chan ch){
    steal();
}

proctype process3 (chan ch){
    steal();
}
```

needs to be checked with -DBITSTATE instruction (approximation)

Spin Version 6.2.4 -- 8 March 2013)
+ Partial Order Reduction

Bit statespace search for:

never claim	- (not selected)
assertion violations	+
cycle checks	- (disabled by -DSAFETY)
invalid end states	+

State-vector 820 byte, depth reached 864, errors: 0

43854194 states, stored

94757319 states, matched

1.3861151e+08 transitions (= stored+matched)

5.5368123e+08 atomic steps

hash factor: 3.06054 (best if > 100.)

bits set per state: 3 (-k3)

Stats on memory usage (in Megabytes):

35131.000	equivalent memory usage for states (stored*(State-vector + overhead))
16.000	memory used for hash array (-w27)
0.076	memory used for bit stack
0.534	memory used for DFS stack (-m10000)
17.022	total actual memory usage

pan: elapsed time **457** seconds

No errors found -- did you verify all claims?