# Models and semaphores

What does Peterson's algorithm achieve?

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2. Mutual exclusion and first-come-first-served fairness
3. Mutual exclusion using busy waiting
4. Mutual exclusion using test-and-set operations

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What properties does the following state/transition diagram show?
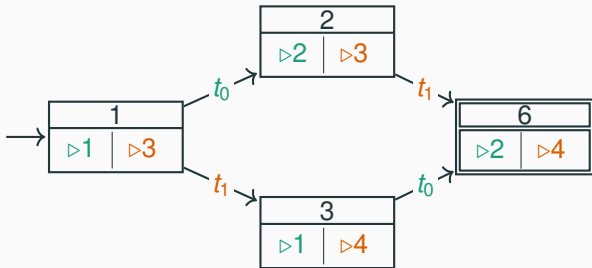
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2. There are no race conditions
3. No starvation can occur, but deadlocks may occur
4. Neither deadlocks nor race conditions may occur

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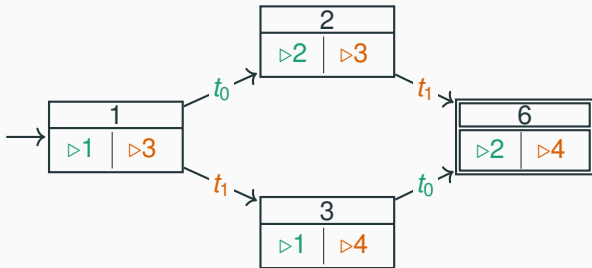
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3. Limiting the amount of concurrency
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What is the value of semaphore s when thread t finishes the last loop iteration?

```
Semaphore s = new Semaphore(2); // capacity 2
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thread t	thread u	
1	**for** (**int** i = 0; i < 10; i++)	**for** (**int** i = 0; i < 10; i++)	4
2	{ s.down();	{ s.down();	5
3	s.up(); }	s.up(); }	6

1. 1
2. 2
3. Either 1 or 2
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What is the value of semaphore s when thread t finishes the last loop iteration?

Semaphore s = **new** Semaphore(1); *// capacity 1*

thread t	thread u

```
1  for (int i = 0; i < 10; i++)      for (int i = 0; i < 10; i++)   4
2  { s.down();                       { s.down();                    5
3    s.up();   }                       s.up();    }                 6
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