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EECS 678

Lab06

Dining Philosophers

1) Describe the asymmetric solution. How does the asymmetric solution guarantee the philosophers never enter a deadlocked state?

Answer: This solution has even numbered phils to pick up in left-right order, while odd-numbered pick up in right-left order. As a result, have of the chopsticks are unclaimed and available so phils can find one when looking to other side.

2) Does the asymmetric solution prevent starvation? Explain.

Answer: As long as thinking and eating periods vary randomly and other factors make when a phil tries to pick up their chopsticks vary randomly, then progress should be roughly equal and no phil should starve ~ slide 12

3)Describe the waiter's solution. How does the waiter's solution guarantee the philosophers never enter a deadlocked state?

Answer: The waiter distributes chopsticks after waiting that both chopsticks are available to distribute to the philosopher. The waiters solution guarantees there is never a deadlocked state because he looks for both chopsticks at once.

4) Does the waiter's solution prevent starvation? Explain.

Answer: slide 16: “does the solution prevent starvation? Hint: NO!!!” . The waiter could possibly never find 2 chopsticks to distribute.

5) Consider a scenario under a condition variable based solution where a philosopher determines at the time it frees its chopsticks that both chopsticks of another philosopher (Phil) it shares with are free, and so it sends the (possibly) waiting Phil a signal. Under what circumstances may Phil find that both of its chopsticks are NOT free when it checks?

Answer: Phil could find that a faster philosopher has grabbed the chopsticks before him if a loop isnt used to make him wait for one.