

1. There could be deadlock if everyone picks up the left chopstick at the same time, because they would all wait forever for the right chopstick to be put down.

Mutual Exclusion - If the philosophers can't share chopsticks, this holds.

Hold and Wait - If the philosophers need 2 chopsticks to eat, this holds.

No preemption of resources - If the philosophers can only put down chopsticks after eating, this holds.

Circular wait - If every philosopher at the table is waiting, this holds.

2. There is no deadlock because this is almost like the dining philosopher's problem, but with an extra chopstick to float around the table. This makes it very easy to share the extra resource among each process.

3a. Need Matrix

	A	B	C	D
P0	0	0	0	1
P1	3	3	3	3
P2	0	0	1	0
P3	1	1	1	0
P4	5	0	1	2

3b. It is in a safe state.

3c. It can be granted immediately.