Deadlocks (1)

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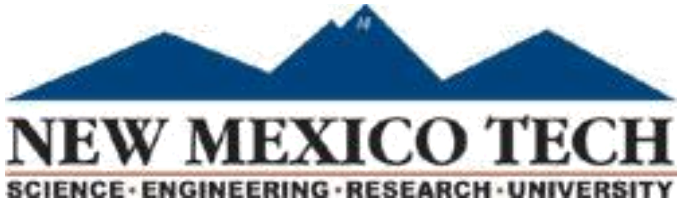
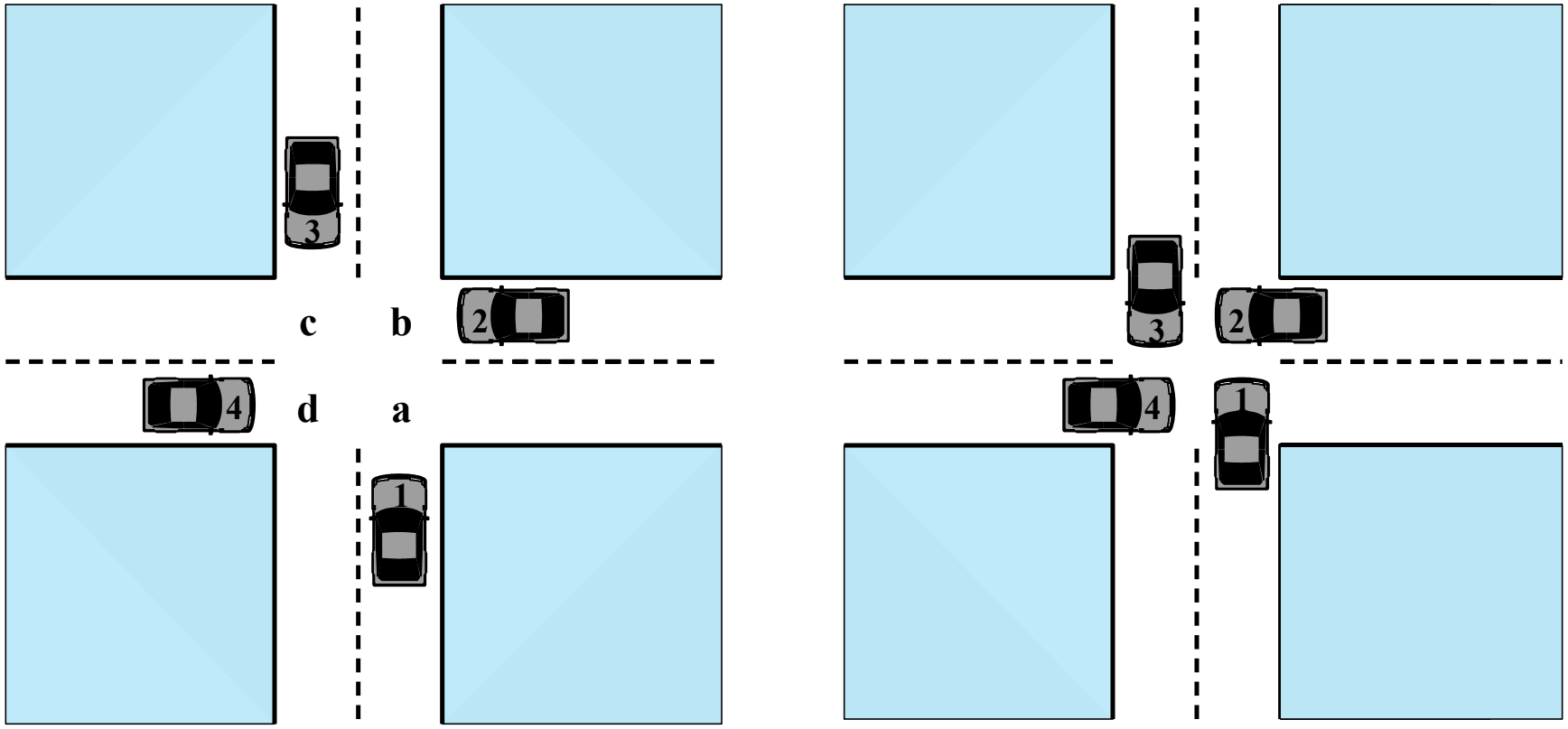
CSE325 Principles of Operating Systems

10/7/2019



Deadlock

- The permanent blocking of a set of processes that either compete for system resources or communicate with each other
- A set of processes is deadlocked when each process in the set is blocked awaiting an event that can only be triggered by another blocked process in the set
- Permanent
- No efficient solution



(a) Deadlock possible

(b) Deadlock

Traffic Deadlock

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Example 1: Reusable Resources

Process P

Step	Action
p_0	Request (D)
p_1	Lock (D)
p_2	Request (T)
p_3	Lock (T)
p_4	Perform function
p_5	Unlock (D)
p_6	Unlock (T)

Process Q

Step	Action
q_0	Request (T)
q_1	Lock (T)
q_2	Request (D)
q_3	Lock (D)
q_4	Perform function
q_5	Unlock (T)
q_6	Unlock (D)

Example 2: Memory Request

- Space is available for allocation of 200Kbytes, and the following sequence of events occur:

P1	P2
. . . Request 80 Kbytes; . . . Request 60 Kbytes;	. . . Request 70 Kbytes; . . . Request 80 Kbytes;

- Deadlock occurs if both processes progress to their second request