操作系统

Operating system

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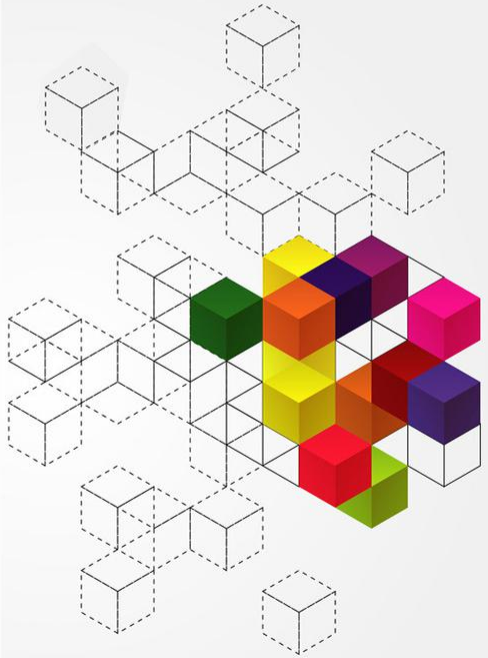
内容纲要

7.1 死锁基本概念

一、 死锁概念

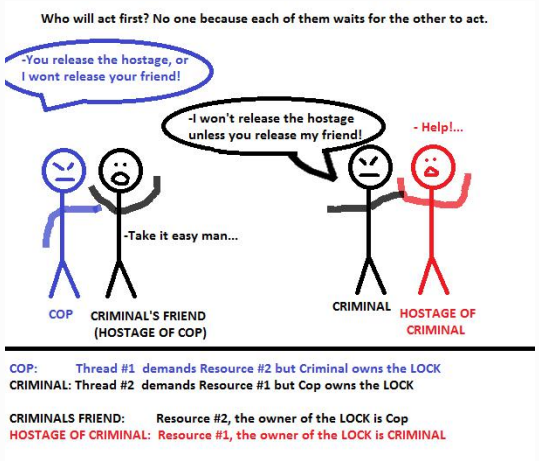
二、 死锁示例

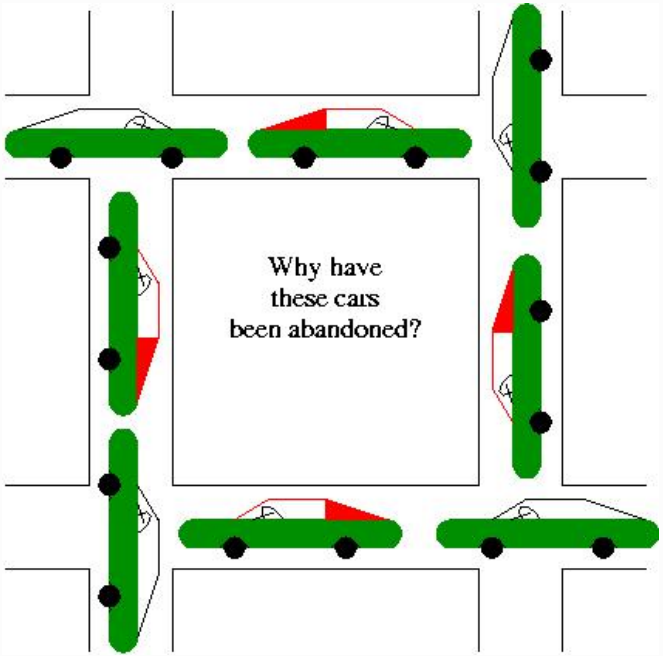
三、 死锁成因

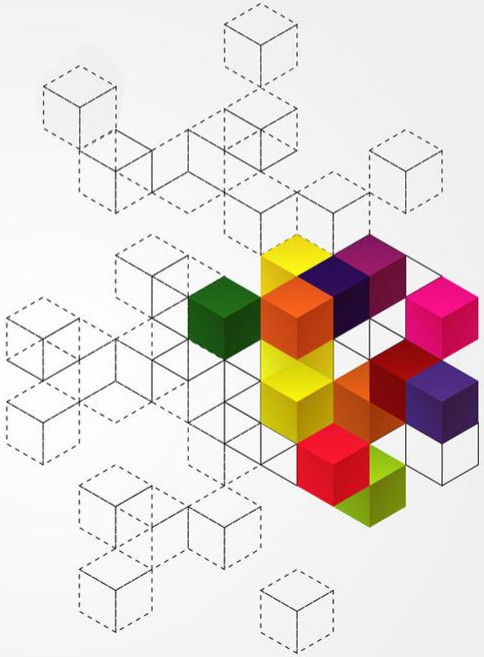


一、死锁概念

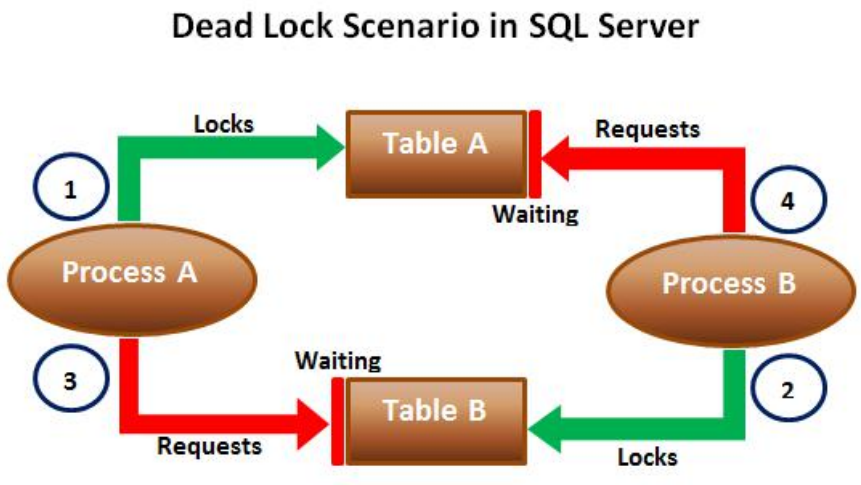
- 什么是死锁


Who will act first? No one because each of them waits for the other to act.
-You release the hostage, or I wont release your friend!
-I won't release the hostage unless you release my friend!
- Help!...
-Take it easy man...
COP
CRIMINAL'S FRIEND (HOSTAGE OF COP)
CRIMINAL
HOSTAGE OF CRIMINAL
COP: Thread #1 demands Resource #2 but Criminal owns the LOCK
CRIMINAL: Thread #2 demands Resource #1 but Cop owns the LOCK
CRIMINALS FRIEND: Resource #2, the owner of the LOCK is Cop
HOSTAGE OF CRIMINAL: Resource #1, the owner of the LOCK is CRIMINAL

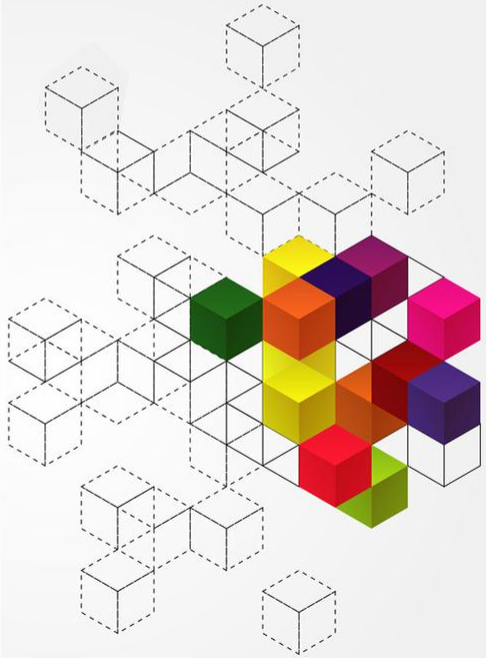

Why have these cars been abandoned?



二、死锁示例

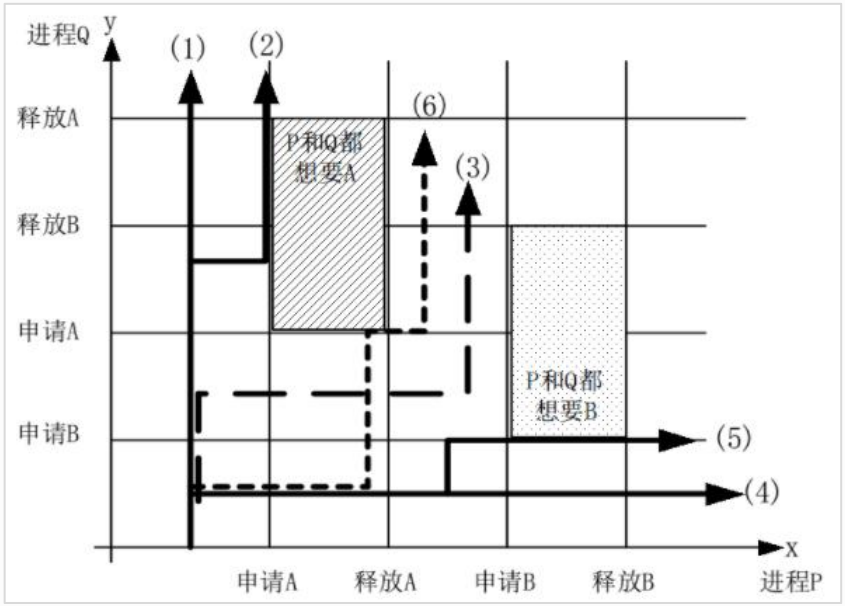


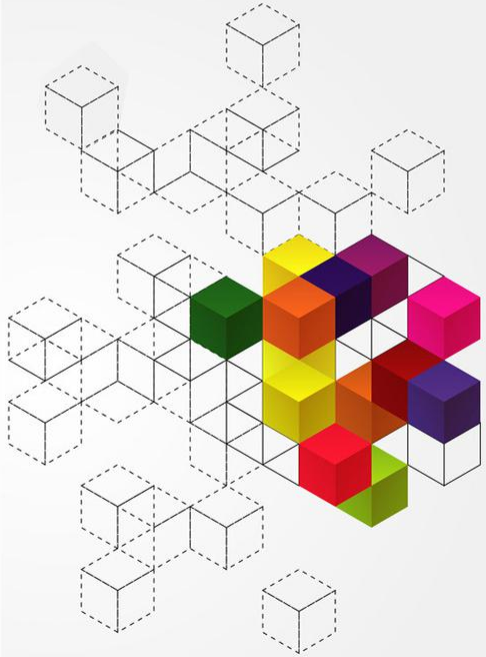
- 因进程A、B同时操作两个table的需求，造成的互锁



三、死锁成因

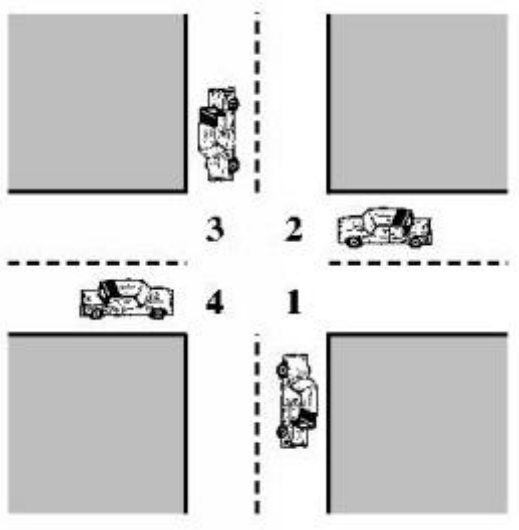
- **导致死锁的两大原因**
  - 系统资源不足
  - 进程推进顺序不当



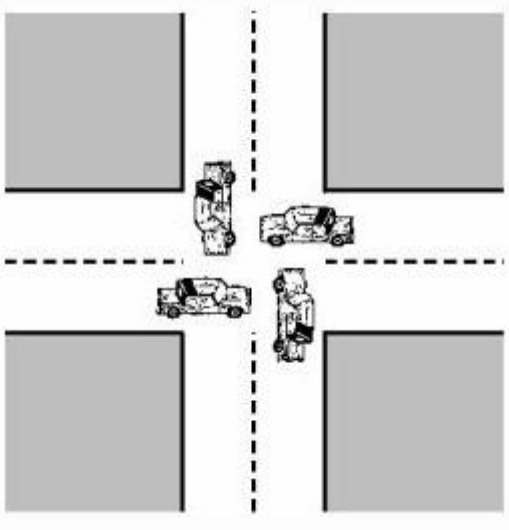


三、死锁成因

- **4 cars deadlock scenario**



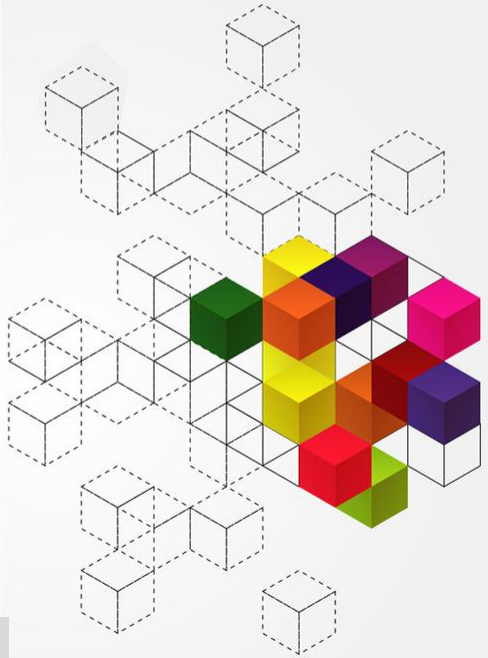
(a)Deadlock possible



(b)Deadlocked

十字路口，空位资源稀缺

4车前进方式不当，导致死锁



本讲小结

- 死锁概念
- 死锁示例
- 死锁成因