CSE 30341: Quiz 2 (5 minutes)

Individual effort. Closed books, notes, etc.

1. Deadlock can arise if four conditions hold simultaneously:
   a. Mutual exclusion: only one process at a time can use a resource.
   b. Hold and wait: a process holding at least one resource is waiting to acquire additional resources held by other processes.
   c. No preemption: a resource can be released only voluntarily by the process holding it, after that process has completed its task.
   d. Circular wait: there exists a set $\{P_0, P_1, \ldots, P_0\}$ of waiting processes such that P_0 is waiting for a resource that is held by P_1, P_1 is waiting for a resource that is held by P_2, ..., P_{n-1} is waiting for a resource that is held by P_n, and P_0 is waiting for a resource that is held by P_0.

   Can you entirely avoid deadlocks by using two instances of a resource instead of one?

2. Suppose two processes in your laptop are deadlocked. For example, assume that Process P1 is holding the printer and is waiting for the scanner and Process P2 is holding the scanner and is waiting for the printer. If you don't clean up the deadlock, can you continue to use the laptop without any further deterioration of service? For this question, we are specifically concerned by the deadlocked processes P1 and P2 and not on other processes that may be independently deadlocked.