1.Which of the following statements is/are TRUE with respect to deadlocks?

A

Circular wait is a necessary condition for the formation of deadlock.

B

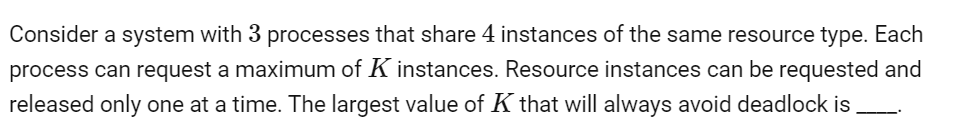
In a system where each resource has more than one instance, a cycle in its wait for graph indicates the presence of a deadlock.

C

If the current allocation of resources to processes leads the system to unsafe state, then deadlock will necessarily occur.

D

In the resource-allocation graph of a system, if every edge is an assignment edge, then the system is not in deadlock state.

2.

3.A system has 6 identical resources and N processes competing for them. Each process can request atmost 2 resources. Which one of the following values of N could lead to a deadlock?

A 1

B 2

C 3

D 6

4.A computer has six tape drives, with n processes competing for them. Each process may need two drives. What is the maximum value of n for the system to be deadlock free?

A 6

B 5

C 4

D 3

5.Consider a multi-threaded program with two threads T1 and T2. The threads share two semaphores: s1 (initialized to 1) and s2 (initialized to 0). The threads also share a global variable x (initialized to 0). The threads execute the code shown below.

// code of T1

wait(s1);

x = x + 1;

print(x);

wait(s2);

signal(s1);

// code of T2

wait(s1);

x = x + 1;

print(x);

signal(s2);

signal(s1);

5.Which of the following outcomes is/are possible when threads T1 and T2 execute concurrently?

A

T1 runs first and prints 1, T2 runs next and prints 2

B

T2 runs first and prints 1, T1 runs next and prints 2

C

T1 runs first and prints 1, T2 does not print anything (deadlock)

D

T2 runs first and prints 1, T1 does not print anything (deadlock)

6.Consider the following pseudocode, where S is a semaphore intialized to 5 in line#2 an counter is a shared variable intialized to 0 in line#1. Assume that the increment operation in line#7 is not atomic.

1. int counter = 0;

2. Semaphore S = init(5);

3. void parop(void)

4. {

5. wait (S);

6. wait (S);

7. counter++;

8. signal (S);

9. signal (S);

10. }

If five threads execute the function parop concurrently, which of the following program behavior (s) is/are possible?

