第7章 死锁 作业

答题版本 2020.11.27 20:06　　试卷得分 90

只能提交1次

1. Consider the following snapshot of a system:

	Allocation	*Max*	*Available*
	A B C D	*A B CD*	*A B C D*
P_0	0 0 1 2	0 0 1 2	1 5 2 0
P_1	1 0 0 0	1 7 5 0	
P_2	1 3 5 4	2 3 5 6	
P_3	0 6 3 2	0 6 5 2	
P_4	0 0 1 4	0 6 5 6	

Answer the following questions using the banker's algorithm:

a. What is the content ofthe matrix *Need?*

b. Is the system in asafe state?

c. If a request fromprocess P1 arrives for (0,4,2,0), can the request be granted immediately?

简答题 (20 分)　　10分

a.
Need: A B C D
P0:　0 0 0 0
P1:　0 7 5 0
P2:　1 0 0 2
P3:　0 0 2 0
P4:　0 6 4 2

答案解释:

a. Need = Max – Allocation. Thus, its content is

Need

	A B C D
P_0	0 0 0 0
P_1	0 7 5 0
P_2	1 0 0 2
P_3	0 0 2 0
P_4	0 6 4 2

b. Yes, the sequence<P_0, P_2, P_3, P_4, P_1> satisfies the safety requirement.

c. Yes. Since

i. Request1(0,4,2,0) <=need1(0,7,5,0)

ii.Request1(0,4,2,0) <= available(1,5,2,0)

iii. The new system state after the allocation is madeis

	Allocation	*Max*	*Need*	*Available*
P_0	0 0 1 2	0 0 1 2	0 0 0 0	1 1 0 0
P_1	1 4 2 0	1 7 5 0	0 3 3 0	
P_2	1 3 5 4	2 3 5 6	1 0 0 2	
P_3	0 6 3 2	0 6 5 2	0 0 2 0	
P_4	0 0 1 4	0 6 5 6	0 6 4 2	

and the sequence < P_0, P_2, P_3, P_4, P_1> satisfies the safety requirement.

2. For operating systems, deadlock means_____.

单选题 (8 分)　8分

A. A program is looping forever

B. hardware malfunctions

C. system halts

D. processes are blocked and wait for each other to finish

正确答案: D

3. Which of the following is not a necessarycondition of deadlock?

单选题 (8 分)　8分

A. Number of resources

B. Hold and wait

C. Mutual exclusion

D. Circular wait

正确答案: A

4. Asystem has 3 concurrent processes, each of which requires 4 items of resourceR. What is the minimum number of resource R in order to avoid the deadlock.

单选题 (8 分)　8分

A. 9

B. 10

C. 11

D. 12

正确答案: B

5. Assumethat a system has 9 instances of 1 resource type shared by 4 processes. Howmany resource instances can a process be allowed to request in order to avoiddeadlock?

单选题 (8 分)　8分

A. 1

B. 2

C. 3

D. 4

正确答案: C

6. There are N processes which share M mutualexclusive resources, each process can hold W resources at most. Which of thefollowing condition may cause a deadlock?

单选题 (8 分)　8分

A. M=2, N=1, W=2

B. M=2, N=2, W=1

C. M=4, N=3, W=2

D. M=4,N=2, W=3

正确答案: D

7. A system is in a deadlock, if its resourceallocation graph _____.

单选题 (8 分)　8分

A. contains a cycle

B. doesn’t contain a cycle

C. contains a cycle and there is just oneinstance of every resource

D. has at least one outgoing edge from any oneof the process nodes

正确答案: C

8. Banker’s algorithm is oneof _____ algorithm。

单选题 (8 分)　8分

A. deadlock recovery

B. deadlock avoidance

C. deadlock prevention

D. deadlock detection

正确答案: B

9. Which of the following operating systemuses Banker's Algorithm to perform deadlock avoidance?

单选题 (8 分)　8分

A. Windows 10

B. Linux

C. iOS

D. Noneof the above

正确答案: D

10. Which of the following phenomena is not a kind of deadlock?

单选题 (8 分)　8分

A. Two cars crossing a single-lane bridge form opposite directions

B. A person is going down a ladder while another is climbing up the ladder

C. Two trains traveling toward each other inthe same track

D. A car cannot move forward because a bridge is damaged.

正确答案: D

11. The deadlock prevention is a set of methods for ensuring that at least one of the necessary conditions of deadlock can not be held. In the following methods, which one breaks the “Circular Wait”condition.

单选题 (8 分)　8分

A. Banker’s Algorithm

B. Each process request and be allocated allits resources before it begins execution

C. Each process request resources in the ascending order of resource ID number.

D. none of the above

正确答案: C