CS & IT ENGINEERING

Operating System

Deadlock

DPP 01 (Discussion Notes)

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01 Question

02 Discussion

Q.1

Which of the following is not a hardware resource?

[MSQ]

A. Semaphore

B. Files

C. Register

D. CPU

Q.2

If a process request is denied by OS and it is blocked forever, then the process is in _____. [MCQ]

A. Starvation

B. Deadlock

C. Ageing

D. Blocking

Q.3

What are the necessary conditions for deadlock?

[MSQ]

A. Mutual exclusion

B. Hold and wait

C. Circular wait

D. Pre-emption

four Characteristics:

1. Mutual Exclusion
2. Hold & wait:

3. Circular Wait
4. No Preemption

Q.4

Consider the following statements:

(i) Cycle in single instance resource is sufficient and necessary condition for deadlock. True.

(ii) Cycle in multi-instance resource is necessary and sufficient condition for deadlock. False

[MCQ]

Which of the following is correct?

A. Only (i) is correct

B. Only (ii) is correct

C. Both (i) and (ii) are correct

D. Both (i) and (ii) are incorrect

Q.5

In which deadlock handling strategy, deadlock can never occur?

[MSQ]

A. Deadlock avoidance (Banker's algorithm)

B. Deadlock recovery X

C. Deadlock removal X

D. Deadlock prevention

Q.6

Consider a system having 'n' resources. All these resources are shared between four processes P_0, P_1, P_2, P_3 and each process has a demand of 6, 9, 7 and 14 respectively.

What should be the maximum value of 'n' in order to lead the system to deadlock?

[NAT]

Peak demands $\Rightarrow$ (P_0 P_1 P_2 P_3)

(6) (9) (7) (14)

5 8 6 13

$\Rightarrow$ 32

$\therefore$

Q.7

[MSQ]

Consider the following system state:

Process	Allocated	Maximum allocation
P_1	2	7
P_2	3	8
P_3	4	6

Total = 11 - 9

Availa-ble = 2

There are total 11 resources available, which of the following sequences will lead system to safe state.

$P_3 P_1 P_2$ OR $P_3 P_2 P_1$

	Allocated	Maximum	Need
P_1	2	7	5
P_2	3	8	5
P_3	4	6	2

New avail = 2+4 = 6

A. ✗ $P_1 P_2 P_3$

B. ✗ $P_1 P_3 P_2$

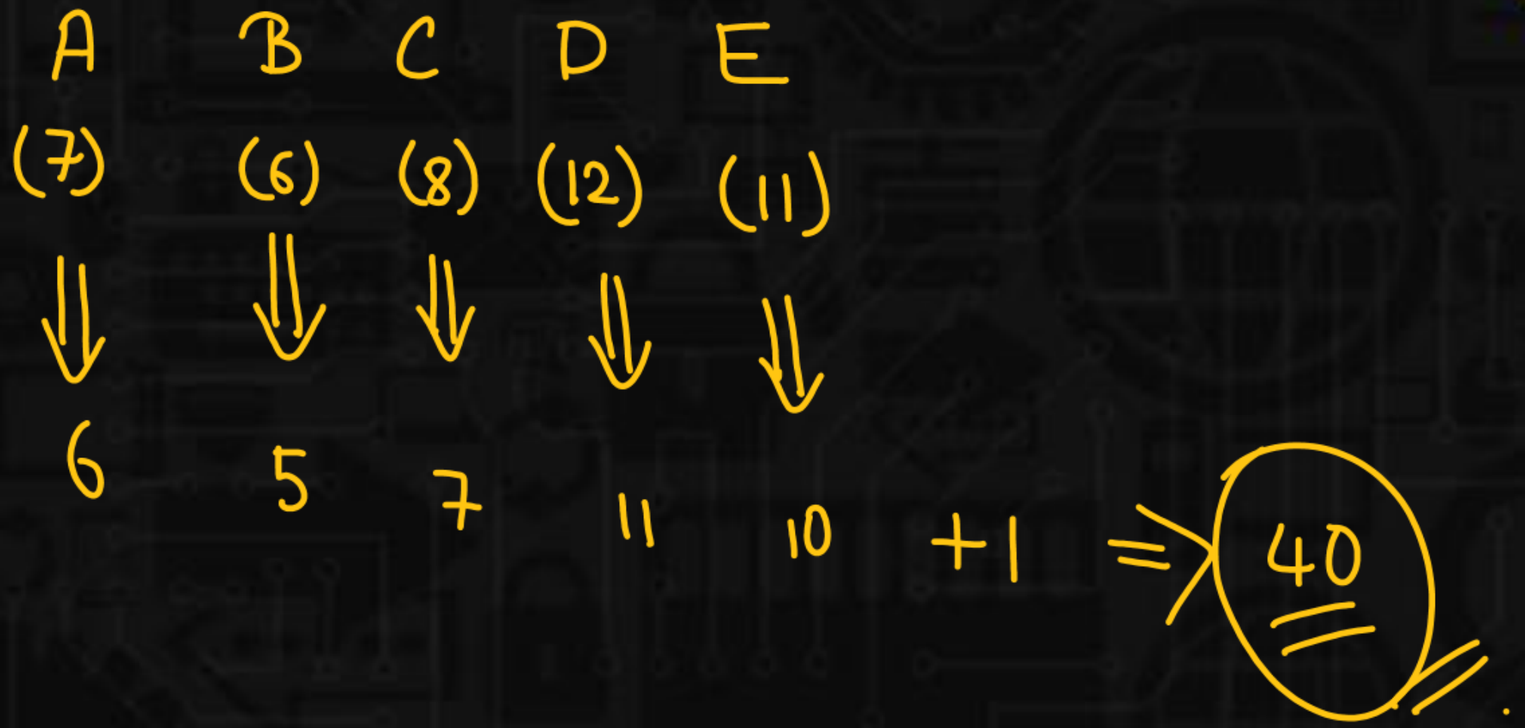
C. ✓ $P_3 P_2 P_1$

D. ✓ $P_3 P_1 P_2$

Q.8

Consider a system with five processes A, B, C, D and E. The requirements of resources to complete execution by A, B, C, D and E are 7, 6, 8, 12 and 11 respectively. Then, what is the minimum number of resources required to avoid deadlock in such a system?

[NAT]



Q.9

If a system has 8 processes, each process needs maximum of 4 instances of a resources 'R', what is the maximum value of resources, so that the system is in deadlock?

[NAT]

(n) No. of processes ⇒ 8

(r) Maximum demand ⇒ 4

$$n(r-1)+1 \leq R$$

To avoid deadlock

$8(4-1) \leq R$

$8(3) \Rightarrow$ P4


THANK YOU GW
SOLDIERS !