Example

Consider a system with 5 processes (P_0, P_1, P_2, P_3, P_4) and 3 resources (A, B, C)

Resource type A has 7 instances

Resource type B has 2 instances

Resource type C has 6 instances

Suppose that at time t_0 we have following resource allocation state

	Allocation			Request			Available		
	A	B	C	A	B	C	A	B	C
							0	0	0
P_0	0	1	0	0	0	0			
P_1	2	0	0	2	0	2			
P_2	3	0	3	0	0	0			
P_3	2	1	1	1	0	0			
P_4	0	0	2	0	0	2			

find (i) whether the system is in deadlock state or not

(ii) If P_2 makes one additional request for an instance type C, then system will be in deadlock state or not.

Solution

Step 1:- Applying deadlock detection algorithm

Work = [0 0 0] = Available

	P_0	P_1	P_2	P_3	P_4
Finish	F	F	F	F	F

Step 2:- for i = 0, P_0.

Finish[0] = F and Request[0] ≤ Work

(0, 0, 0) ≤ (0, 0, 0)

Since both the Conditions are true

Work = Work + Allocation

= 0 0 0 + 0 1 0

Work = [0 1 0]

	P_0	P_1	P_2	P_3	P_4
Finish	T	F	F	F	F

Step 3 i=1, P_1

Finish[1] = False & $Request_1 \leq Work$

$[202] \leq [010]$

Since second cond^n is false, so request cannot be processed.

Step 4 i=2, P_2.

Finish[2] = False & $Request_2 \leq Work$

$[000] \leq [010]$

Since Both conditions are true

Work = Work + Allocation

= 010 + 303

Work = 313

	P_0	P_1	P_2	P_3	P_4
Finish	T	F	T	F	F

Step 5 i=3, for P_3.

Finish 3 = False & Request[3] $\leq$ Work

$100 \leq 313$

Both conditions are true

Work = Work + Allocation

= 313 + 211

Work = 524

Step 6 i = 4 for P4

finish[4] = false & Request4 ≤ work

[0 0 2] ≤ [5 2 4]

work = work + Allocation

= 5 2 4 + 0 0 2

work = [5 2 6]

	P0			
Finish	T	F	T	T	T

Step 7 i = 1 for P1

finish1 = false & 2 0 2 ≤ 5 2 6

work = work + Allocation

= 5 2 6 + 2 0 0

work = [7 2 6]

Hence System does not has deadlock