Tuto N° 5 OSII

Deadlock: Detection and Prevention

Exercise 01: Detection

Consider a system using deadlock detection.

1) At time t1, the system state is as follows:

	ALLOC	REQUEST	AVAIL
p1	1 0	2 2	1 1
p2	0 1	1 0	
p3	1 1	X Y	
p4	2 0	1 2	

We are asked to:
- **a)** Calculate **RMAX**.
- **b)** What is the maximum value of the request **[X Y]** of **p3** for which the system state is safe? (Justify your answer).
- **c)** After setting the maximum value of **Request3**, represent the state graph of the system.

2) At the following time t2, process p2 obtains the resource it requests, then terminates and releases all the resources it holds. To which process should the allocator allocate these resources to maintain the system in a safe state (Justify your answer).

Exercise 2: Prevention

Consider a system using the Banker's algorithm. At the instant **t1** considered, the system state is defined as follows:

	ALLOC	NEED	REQUEST	AVAIL
p1	1 1 0	2 2 1		0 1 1
p2	1 0 0	1 1 1		
p3	1 0 1	X Y Z		
p4	0 1 0	1 2 2		

1)

    a) Calculate **RMAX** and **REQUEST**

    b) What is the maximum value of NEED of **p3** for which the system state is reliable? (Justify your answer).

2) By setting the NEED of **p3** to that obtained in question 1.b, the process p2 makes the request = [0 1 1] . can this request be satisfied immediately? (justify your answer).