

Score: _____

Name: _____

ECE 3055 Quiz - April 21, 2010

For the Bankers Algorithm, compute need when the following initial states are in effect.

Process	Allocation	Max	Need	Available
	A B C D	A B C D	A B C D	A B C D
P0	1 0 0 0	1 3 5 1	0 3 5 1	1 4 2 1
P1	0 5 3 1	2 5 5 2	2 0 2 1	
P2	1 3 5 4	3 4 5 6	2 1 0 2	
P3	0 2 2 0	0 3 2 0	0 1 0 0	
P4	0 0 1 0	0 3 1 0	0 3 0 0	

Is the system currently in a safe state? Y Y or N. Scan through processes in strict sequential order (i.e. low to high and then back to low) when searching for a safe sequence. Justify your answer by showing a safe execution sequence below:

P3, P4, P0, P1, P2

Next, process P1 issues a request for (1,0,2,1). Can the request be granted? N Y or N
 Justify your answer by showing your work below and show a safe execution sequence, if one exists. Prove it, if one does not exist. Scan through processes in strict sequential order (i.e. low to high and then back to low) when searching for a safe sequence. No credit for answer without showing your work below and a safe sequence, or showing that no safe sequence exists along with which processes can finish and which processes face possible deadlock waiting for resources allocated to other deadlocked processes.

Process	Allocation	Max	Need	Available
	A B C D	A B C D	A B C D	A B C D
P0	1 0 0 0	1 3 5 1	0 3 5 1	0 4 0 0
P1	1 5 5 2	2 5 5 2	1 0 0 0	
P2	1 3 5 4	3 4 5 6	2 1 0 2	
P3	0 2 2 0	0 3 2 0	0 1 0 0	
P4	0 0 1 0	0 3 1 0	0 3 0 0	

$$\begin{array}{r}
 \text{P3} \quad 0400 \\
 \quad \quad 220 \\
 \hline
 \quad \quad 0620 \\
 \text{P4} \quad 0010 \\
 \hline
 \quad \quad 0630
 \end{array}$$

but P0, P1, P2 may deadlock (unsafe)
 do not grant request