Score:_____ Name:_____

ECE 3055 Quiz - November 30, 2011

There are a total of 3A, 12 B, 14 C, and 11 D resources in a system. Compute need and available when the following states are in effect (assume this initial state is safe):

Process	Allocation	Max	Need	Available
	ABCD	ABCD	ABCD	ABCD
P1	0 2 2 0	0 3 2 0	0100	1136
P2	0 6 3 1	2 6 5 2	2021	
P3	1 3 5 4	3 4 5 5	2101	
P4	1 0 0 0	1 3 5 1	0351	
P5	0 0 1 0	0 3 1 0	0300	

Next, process P2 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 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
	ABCD	ABCD	ABCD	ABCD
P1	0 2 2 0	0 3 2 0	0100	0115
P2	1652	2 6 5 2	1000	
P3	1 3 5 4	3 4 5 5	2101	
P4	1 0 0 0	1 3 5 1	0351	
P5	0 0 1 0	0 3 1 0	0300	

0115
P1 0220
0335
P5 0010
0345

P1, P5 Finish

P2, P3, P4 can deadlock

Where and how would this algorithm potentially be used in a new OS design?

run in OS whenever a process requests a resource. Only grant resource if system is in a safe state to avoid deadlocks