Quiz 4

CMPS 405: Operating Systems

Name:

ID:

Imagine a system that has 2 resources of A, 4 of B, and 5 of C. Consider the following state of the system:

Max Demand			
	A	B	C
P0	1	1	2
P1	2	3	5
P2	2	0	3
P3	1	1	2
P4	1	4	1

Initial Allocation			
	A	B	C
P0	1	0	1
P1	0	2	1
P2	1	0	0
P3	0	1	1
P4	0	0	0

Part (a)

If P1 requests one instance of B, should it be granted? If so, give the escape sequence that verifies this is safe. If not, show why not.

In this case the need table is:

Need			
	A	B	C
P0	0	1	1
P1	2	0	4
P2	1	0	3
P3	1	0	1
P4	1	4	1

And available is…

Available		
A	B	C
0	0	2

A quick analysis shows that we can't even start an escape sequence. This request should not be granted.

Part (b)

Pretend part (a) never happened. If P3 requests one instance of C, should it be granted? If so, give the process escape sequence that verifies this is safe. If not, show why not.

Here, the need table is:

Need			
	A	B	C
P0	0	1	1
P1	2	1	3
P2	1	0	3
P3	1	0	1
P4	1	4	1

And available is…

Available		
A	B	C
0	1	1

We can produce a valid escape sequence: P0, P3, P2, P1, P4.

The work for this looks as follows:

Available			
A	B	C	
0	1	1	Initial
1	1	2	After removing p0
1	2	4	After removing p3
2	2	4	After removing p2
2	4	5	After removing p1
2	4	5	After removing p4