CS481 PA05

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1. Consider the scenario that there are five processes in the system, i.e. P_0, P_1, P_2, P_3, P_4. A, B, C, and D represent four resource types and the follwing table is the snapshot of a system. Please find the physical meanings of Allocation, Max, and Available matrixes in slide M05b.

Iteration	Process	Available	Max	Allocated
		A B C D	A B C D	A B C D
1	P0	1 5 2 0	0 0 0 0	0 0 1 2
2	P2	1 5 3 2	1 0 0 2	1 3 5 4
3	P1	2 8 8 6	0 7 5 0	1 0 0 0
4	P3	3 8 8 6	0 0 2 0	0 6 3 2
5	P4	3 14 11 8	0 6 4 2	0 0 1 4

Following the Banker's algorithm, we are able to find a safe sequence; $P_0 \to P_2 \to P_1 \to P_3 \to P_4$.

For each iteration, we loop through the pending processes in order (in this case, ascending order of process index) looking for the first process, if any such process exists, that is able to be met with the available resources. The Banker's algorithm is essentially just the most intuitive approach to a greedy algorithm given a Process, resource requirement. After each iteration we free the resources that were being constrained by that process, then restart the look through the remaining resources checking for the next possible process we can free.

For each process, P, the required resources are given. We are also given the starting available resources as the resources that are available for the first process. For each iteration we then just need to calculate the resources that will be available for the next process by subtracting $Available$ from Max. This is how we come to our final answer.