Question 1) Parts a,b,c (20 points total)

1a. (5pts) What is the purpose of the "Banker's Algorithm?" Specifically, what does it mean for a system to be in a "safe" state? What does it mean for a system to be in an "unsafe" state?

1b. (10pts) Given the following Resources (A,B,C) with Quantity (10,5,7) for processes P0, P1, P2, P3, P4 and available (3, 3, 2), what is the state of the system? If there is a choice between two processes, the lower numbered process should be used. Please show your work for credit.

	Allocated	Max	Need
	A, B, C	A, B, C	
P0	0, 1, 0	7, 5, 3	
P1	2, 0, 0	3, 2, 2	
P2	3, 0, 2	9, 0, 2	
P3	2, 1, 1	2, 2, 2	
P4	0, 0, 2	4, 3, 3	

1c. (5pts) Show the Resource Allocation Graph (RAG) for the system described in 1b.

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Question 2 parts a,b (20 points total)

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Question 3 parts a,b,c (20 points total)

3a. (8pts) Given the following page requests (1, 2, 3, 4, 2, 5, 4, 6, 2, 5, 4, 7, 5, 4, 6) and a 4-frame page table, how many page faults will occur using the Least Recently Uses (LRU) algorithm? Please show your work for credit.

3b. (8pts) Given the same page requests as above (1, 2, 3, 4, 2, 5, 4, 6, 2, 5, 4, 7, 5, 4, 6) and a 4-frame page table, how many page faults will occur using the second chance (clock) algorithm? Please show your work for credit.

3c. (4pts) Which algorithm from a and b above has the fewest page faults? In terms of implementation, which algorithm is more complex to implement and why?

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Scratch Page- This page (front and back) will not be graded.

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