

Name _____

All questions are worth 10 points. Maximum score: 100

- Given the following allocation tables, is the system in a safe state? If we grant a request of (1,0,0) from P3, will the system be in a safe state? If the states are safe, show the safe sequence. Otherwise show where building the safe sequence fails.

	Has		
	A	B	C
P0	1	1	0
P1	1	0	1
P2	0	0	0
P3	0	0	0
P4	0	1	0

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

	Free		
	A	B	C
	1	0	0

2. Is the following system deadlocked? If not show the “safe sequence” otherwise, list the processes that are deadlocked. If process P3 makes a request of (0,0,1) will this cause a deadlock?

	Has		
	A	B	C
P0	0	1	0
P1	1	0	0
P2	0	0	0
P3	1	0	0
P4	0	0	1

	Req		
	A	B	C
	1	0	0
	0	0	1
	2	0	1
	0	0	0
	0	1	0

Free		
A	B	C
0	0	0

3. We have created a decimal machine with four-digit addresses. The first two digits are the page number, while the second two are the offset. Translate the following addresses, using the given table. If a particular virtual address cannot be translated, write “page fault” for the virtual address.

Page Table

32xx
27xx
14xx
21xx
32xx
47xx
44xx
55xx
01xx

Virtual	Real
0722	
0831	
0001	
0531	
1642	
0322	
0991	
0399	
0221	
0450	

- 4 What are the four types of information that you would expect to find on any disk drive.

- 5 In the LINUX file system, what is the function of the INODE table? What does an INODE table entry look like?

6. In the NTFS file system, what is the function of the Master File Table (MFT)?

7. Explain the difference between ONE-ONE threading, and MANY-ONE threading. What tools (packages & system calls) would be used for each of these on a Linux operating system?

8. Explain Round Robin scheduling. What does the term “Quantum” mean?

9. Suppose we have a file with 7 sectors, 23, 24, 25, 91, and 12, 13, and 14 in that order. What would the directory entry for the file contain for the three file organizations, Linked List, Multiple Contiguous Blocks, and indexed?

10. What is deadlock prevention? In other words, what must you do to prevent deadlocks from occurring?