Previous Exam Questions

Starvation happens when some processes are continually preferred over others.

True/ False

Priority inversion happens when a high priority process prevents a low priority process from making progress by holding some resource.

True/ False

Opening a file using a hard link requires more disk accesses than opening the same file using a symbolic link.

True/ False

Good security protects a system against accidental attacks as well as intentional ones.

True/ False

Two-level page tables double the memory access time

True/ False

Explain the terms:

1. DOS
2. PCB
3. RR
4. LRU
5. ACL

Fill in the following table by writing "I" if the combination of row and column headings for that cell is impossible, or writing "P" if the combination is possible.

	Virtual Page in Memory	Virtual Page not in Memory
TLB Hit		
TLB Miss		

What is the main advantage of using blocking sends and receives?

1. The sender knows the receiver has the message when it returns from send which may simplify programming since we don't need to check separately that the receiver got the message.

What is the main disadvantage of using blocking sends and receives?

1. The sender must wait for the receiver before the message can be sent, instead of going on to other work.
2. Sender will block forever if receiver dies or doesn't ask to receive message for any reason.

Explain the difference between a preemptive scheduler and a non-preemptive scheduler, and give one example of the type of system where each might be used.

Preemptive: context switch on events (time slice expires, higher priority process becomes runnable)

Examples:

Preemptive: Preemptive systems: real time systems, time shared systems, interactive systems

Non-preemptive: batch systems, single-application systems (embedded systems)

Are synchronization problems easier to solve when preemptive scheduling is used, or when non-preemptive scheduling is used? Explain why.

Describe seek time, rotation time and transfer time. How long do these typically take?

Seek time: Finding the right track (5-6ms)

Rotation time: Rotate to find the sector in a track (3 ms)

Transfer time: Transferring data from surface into disk controller electronics, sending it back to the host. (depends on disk bandwidth, size of request)

Suppose that a disk drive has 200 cylinders, numbered 0 to 199. The driver is currently serving a request at cylinder 100. The queue of pending requests is, in the order received: 23, 89, 132, 42, 187

Starting from the current head position, what is the total distance (in cylinders) that the disk arm moves to satisfy all the pending requests for the following scheduling algorithms.

FCFS

SSTF

Consider the following two-dimensional array int X[64][64] suppose that a system has four page frames and each frame is 128 words(an integer occupies one word). Programs that manipulate the X array fit into exactly one page and always occupy page 0. The data are swapped in and out of the other three frames. The X array is stored in row major order(i.e., X[0][1] follows X[0][0] in memory). which of the two code fragments shown below will generate the lowest number of page faults? explain and compute the total number of page faults.

Fragment A:

for(int j=0; j ≤ 63; j++)

    for (int i=0; i ≤ 63; i++)

        X[i][j] = 0;

Fragment B:

for(int i=0; i ≤ 63; i++)

    for (int j=0; j ≤ 63; j++)

        X[i][j] = 0;

Consider a Unix-like file system that maintains a unique index node for each file in the system. Each index node includes 8 direct pointers, a single indirect pointer, and a double indirect pointer. The file system block size is B bytes, and a block pointer occupies P bytes.

Write an expression for the maximum file size that can be supported by this index node, in terms of B and P.

Briefly explain the SSL protocol

You just saw it today.

GOOD LUCK GUYS!