

Which of the following statements about the CPU's handling interrupts is incorrect? \*

None of the other choices

The CPU branches to a new instruction sequence

The hardware saves the old PC location

The processor ceases to execute the current sequence of instructions -

None of the other choices

\_\_\_\_\_ is the partitioning of a single server, each of which can support a different operating \*

Multiprocessing

Multithreading

Shared processing

Virtualization -

D

Consider a computer system that has cache memory, main memory (RAM) and disk, and OS uses virtual memory. It takes 1 nsec to access a word from the cache, 10 nsec to access a word from RAM, and 10 msec to access a word from the disk. If the cache hit rate is 95% and main memory hit rate is 99%, what is average time to access a word? \*

a. 1.445 nsec

b. 5,001.445 nsec

c. 5,000.495 nsec

d. 5,000.95 nsec -

B

Booting a general purpose computer involves the following steps except \*

a. Loading the OS

b. Loading the command interpreter

c. Loading one or more bootstrap loaders

d. Execution of a ROM-based POST sequence -

B

As one proceeds down the memory hierarchy (from inboard memory to offline storage), which of the following conditions is correct? \*

Decreasing access time

None of the other choices

Decreasing cost per bit

Decreasing capacity -

C

The two basic types of processor registers are: \*

User-visible and user-invisible registers

None of the other choices

Control and Status registers

General and special registers -

D

Consider a computer system that has cache memory, main memory (RAM) and disk, and OS uses virtual memory. It takes 2 nsec to access a byte from the cache, 20 nsec to access a byte from RAM, and

10 msec to access a block of 1000 bytes from the disk. If a book has 1000 pages, each with 50 lines of 80 characters each, How long it will take to electronically scan the text for the case of the master copy being in each of the level as one proceeds down the memory hierarchy (from inboard memory to offline storage)? \*

1 msec, 10 msec, 5 sec

1 msec, 10 msec, 10 sec

2 msec, 20 msec, 10 sec

4 msec, 40 msec, 20 sec -

D

The main characteristics of layered system does not include: \*

A. Upper layer can only call functions of closely lower layer

B. Each layer has well defined functions

C. Each layer runs independently

D. Many layers -

C

Which of special register in the CPU points to the top of the current stack in the memory? \*

PC

PSW

IR

SP -

D

A CPU may have multiple execution units, so that can carry out multiple instructions in the same time is called: \*

0/1

None of the other choices

Multicore

Pipeline

Superscalar -

D

Consider a computer system that has cache memory, main memory (RAM) and disk, and OS uses virtual memory. It takes 2 nsec to access a word from the cache, 20 nsec to access a word from RAM, and 10 msec to access a word from the disk. If the cache hit rate is 95% and main memory hit rate is 99%, what is average time to access a word? \*

5,000.99 nsec

5,002.89 nsec

2.89 nsec

5,001.9 nsec -

B

Information that must be saved prior to the processor transferring control to the interrupt handler routine includes: \*

0/1

PSW

None of the other choices

PSW and Contents of processor registers

PSW and PC -

D

Examples of general purpose stored program computers include the following except \*

0/1

Personal computers

Network servers

Workstations

MP3 player -

D

The ways that input/output can be done is? \*

DMA (Direct Memory Access)

All of the other choices

Busy waiting

Interrupt -

B

List of memory location, that contains the executable program, the program's data, and its stack is called: \*

0/1

set of resources

all of the other choices

address memory

address space -

D

Which is not an example of a resource that is commonly space-multiplexed? \*

0/1

Video RAM

Main memory

CPU

Hard drive -

C

Which of the following is not a step in the boot process? \*

1/1

The BIOS is activated by powering on the CPU

Configuration and customization settings are checked

The antivirus program checks all files for viruses

The operating system is loaded into RAM -

C

Which of special register contains the Mode Bit (user or kernel)? \*

1/1

Program Counter (PC)

None of the other choices

Program Status Word (PSW)

Instruction Register (IR) -

C

Which is not an example of a resource that is commonly time-multiplexed? \*

1/1

CPU

Graphics accelerator

Main memory

Network interface -

Can be erased and rewritten

Unprogrammable

Volatile

None of the other choices -

A

C

Where is the position of the operating system in computer system:

The major operating system services provide mechanisms for secure and efficient are: \*

1/1

1/1

Above the hardware and under the user interface program

Communication between processes

Between the user interface program and the application Program

All of the other choices

In user space

Execution of a program, I/O operations performed by it, and detecting and reporting errors caused by it

None of the other choices -

File manipulation -

A

B

Which of the main bus in the IBM PC computer that can run at 66 MHz and transfer 8 bytes at a time? \*

Which of the following instructions should be allowed only in kernel mode? \*

1/1

1/1

PCI (Peripheral Component Interconnect)

ADD of two numbers

ISA (Industry Standard Architecture)

AND of two numbers

None of the other choices

Disable all interrupts

ISA and PCI -

Read the time-of-day clock -

A

C

Which of the following statements about Electrically Erasable PROM (EEPROM) is correct? \*

As one proceeds down the memory hierarchy (from inboard memory to offline storage), which of the following conditions is correct? \*

1/1

1/1

Increasing cost per bit  
Decreasing access time  
None of the other choices  
Increasing capacity -

D

The main characteristics of exokernels is:  
\*

1/1

A subset of the resources is given in user mode

The program, called the exokernel runs in kernel mode

Exokernels need only keep track of which virtual machine assigned which resource

All of the other choices -

D

The language of the CPU is known as its \*

1/1

None of the other choices

Instruction set

Register set

Control unit set -

B

Which of special register contains the condition code bits, the CPU priority, the mode bit and other control bits)? \*

1/1

None of the other choices

Program Counter (PC)

Instruction Register (IR)

Program Status Word (PSW) -

D

Which of the following statements about Random Access Memory (RAM) is correct? \*

1/1

Is volatile

Stores all the files on the computer

Can only be read sequentially

Is typically faster than cache memory -

a

VMware Workstation is: \*

1/1

Type 2 Hypervisor

Host Operating system

Type 1 Hypervisor

Guest Operating system -

A

Which of the following is correct about advantages of layered system? \*

1/1

None of the other choices

Easier to debug from lower to upper layer

Easier to extend and Easier to debug from lower to upper layer

Easier to extend -

C

Which of the following instructions should be allowed only in kernel mode? \*

1/1

All of the other choices

Change the memory map

Set the time-of-day clock

Disable all interrupts -

A

Which of the following statements about the CMOS is incorrect? \*

1/1

Is volatile

To contain BIOS

To hold the configuration parameters

To hold the current time and date -

B

What part of the boot process determines whether the peripheral devices are working properly? \*

1/1

ROM

POST

CMOS

BIOS -

B

The four main structural elements of a computer system are: \*

1/1

Processor, Registers, I/O Modules, Main Memory

None of the other choices

Processor, Registers, Main Memory, System Bus

Processor, Main Memory, I/O Modules, System Bus -

D

As one proceeds down the memory hierarchy (from inboard memory to offline storage), which of the following conditions is correct? \*

1/1

Decreasing capacity

None of the other choices

Increasing cost per bit

Increasing access time -

D

What is not a main function of an operating system? \*

1/1

Provide the users with an extended (virtual) machine

Manage the I/O devices

Provide user interfaces

Support virtual memory -

C

As one proceeds down the memory hierarchy (from inboard memory to offline storage), the following conditions apply: \*

1/1

Increasing capacity

Decreasing cost per bit

All of the other choices

Increasing access time -

C

Which of the following is not a operating mode of CPU \*

1/1

Kernel mode

User mode

Management mode

None of the other choices -

C

A special register that contains the address of the next instruction to be fetched is called: \*

0/1

Instruction Register (IR)

All of the other choices

Program Counter (PC)

Program Status Word (PSW) -

C

Which of the following operating systems is a example of monolithic system? \*

1/1

MS-DOS

Mac OS

UNIX

Windows XP -

A

A CPU may have two or more complete processors, so that can carry out multiple threads in the same time is called: \*

1/1

Pipeline

Multicore

None of the other choices

Superscalar -

B

Which of the following instructions should be allowed in user mode? \*

1/1

Read the time-of-day clock

Set the time-of-day clock

Disable all interrupts

Change the memory map -

A

The main bus in the IBM PC computer are: \*

0/1

PCI (Peripheral Component Interconnect)

ISA and PCI

None of the other choices

ISA (Industry Standard Architecture) -

B

The general role of an operating system is to: \*

1/1

Provide a set of services to system users

Act as an interface between various computers

None of the other choices

Manage files for application programs -

A

The operating system structure in which the communication between requesting process and responding process is message passing? \*

0/1

All of the other choices

Monolithic Systems

MS - DOS

Client - Server Model -

D

What is interrupt vector? \*

1/1

Part of memory which contains the addresses of interrupt handlers

The addresses of interrupt handlers

A signal an I/O device sends to CPU

None of the other choices -

A

Which of the following actions generates an external interrupt? \*

1/1

A page that does not exist in the main memory is accessed by the virtual storage management.

An input/output operation is completed.

Division by zero occurs.

A system call instruction is executed. -

B

An operating system \*

1/1

Manages software resources in a computer system

Deals with complex hardware resources and provides the user a virtual/extended machine that is much easier to deal with than the physical machine

Manages hardware resources in a computer system

All of the other choices -

D

A CPU may have separate fetch, decode and execute units, so that can carry out three steps of the three instructions in the same time is called: \*



1/1

Pipeline

None of the other choices

Superscalar

Multicore -

A

The basic idea behind the microkernel design is: \*

1/1

Only one module runs in kernel mode

To achieve high reliability by splitting operating system up into small, well-defined modules

All other modules run as relatively powerless ordinary user processes

All of the other choices -

D

What does the virtual machine monitor do? \*

1/1

Does the multiprogramming

Provides several virtual machines to the next layer up

All of the other choices

Runs on the bare hardware. -

C

Which is the fastest bus in the IBM PC computer? \*

0/1

PCI (Peripheral Component Interconnect)

IDE (Integrated Drive Electronics)

ISA (Industry Standard Architecture)

USB (Universal Serial BUS) -

A

Consider a computer system that has cache memory, main memory (RAM) and disk, and OS uses virtual memory. It takes 2 nsec to access a word from the cache, 10 nsec to access a word from RAM, and 10 msec to access a word from the disk. If the cache hit rate is 95% and main memory hit rate is 99%, what is average time to access a word? \*

1/1

5,000.495 nsec

5,001.9 nsec

2.395 nsec

5,002.395 nsec -

D

Which of the following conditions that causes the processes to be terminated, when the processes executes a system call tell the OS to finish some other process? \*

0/1

Normal exit (voluntary)

Error exit (voluntary)

Fatal error (involuntary)

Killed by another process (involuntary) -

D

Which of the following conditions that causes the processes to be terminated, when the processes have a program bug? \*

0/1

Fatal error (involuntary)

Error exit (voluntary)

Normal exit (voluntary)

Killed by another process (involuntary) -

A

Operating system abstraction supports the ability to have \_\_\_\_\_ operation even when there is only one CPU available \*

1/1

multiple

none of the other choices

parallel

pseudoparallelism -

D

What is the "sequential processes" concept? \*

1/1

There are both many CPU and many PC

None of the other choices

All process is executed in concurrency

No concurrency inside a process; everything happens sequentiall -

D

How many percent of the CPU time is wasted, when a computer system has enough room to hold two program and these programs are idle waiting for I/O half the time? \*

1/1

75%

50%

25%

None of the other choices -

C

\_\_\_\_\_ is the act of allowing only one process to have access to a dedicated resource \*

1/1

Mutual exclusion

Circular wait

No preemption

Resource holdin -

A

Which of the following statements about user-level threads and kernel-level threads is correct? \*

0/1

None of the other choices

Both user-level threads and kernel-level threads can write into each other's memory space

Kernel-level thread scheduling is faster than user-level thread scheduling

Both user-level threads and kernel-level threads use OS services via system calls -

B

Which of the following cannot be shared among different threads of a process? \*

1/1

Stack

Process code

File handles

Process data -

A

A \_\_\_\_ is a portion of a process that can run independently \*

1/1

thread

program

miniprocess

subprocess -

A

Five batch jobs A through E, arrive at a computer center at almost the same time. They have estimated running times of 8, 6, 2, 10, and 4 minutes. . Determine the average waiting time for FCFS scheduling. Ignore process switching overhead . \*

0/1

18 minutes

18.8 minutes

17 minutes

12,8 minutes -

D

Which of the following is appropriate to release page table and pages? \*

1/1

Process creation

Process termination time

Page fault time

Process execution -

B

Which of the events that causes the processes to be created, when the operation system creates a new process and runs the next job from the input queue? \*

0/1

Initiation of a batch job

User request to create a new process

System initialization

Execution of a process creation system call -

A

How many percent of the CPU time is wasted, when a computer system has enough room to hold two program and these programs are idle waiting for I/O 10% of the time? \*

1/1

99%

1%

None of the other choices

90% -

B

What happens when a thread calls Down (S) when it wants to enter its critical section, where S is a binary semaphore set to 1? \*

1/1

The thread is blocked and added to a queue of waiting threads.

The semaphore is set to 2.

The thread is allowed to enter its critical section and S is decremented.

None of the other choices -

C

Which of the following statements is a hardware solution to the critical region problem? \*

1/1

TSL

Semaphore

None of the other choices

Shared memory -

A

Which of the following is not true about process hierarchy? \*

1/1

Window has no concept of a process hierarchy

In Unix, a process and all its children and further descendants together form a process group

A process creates child process. The child process can itself create more processes, forming a process hierarchy

A process may have more than one parent -

D

Which conditions of mutual exclusion does the Strict Alternation (Software proposal) violate? \*

1/1

No process running outside its critical region may block another process

No assumptions made about speeds or numbers of CPUs

No process must wait forever to enter its critical region

No two processes simultaneously in critical region -

A

Five batch jobs A through E, arrive at a computer center at almost the same time. They have estimated running times of 8, 6, 2, 10, and 4 minutes. Their (externally determined) priorities are 3, 5, 2, 1, and 4, respectively, with 5 being the highest priority. Determine the average waiting time for Priority scheduling. Ignore process switching overhead. \*

0/1

16,8 minutes

12,8 minutes

54 minutes

10,8 minutes -

D

high statement about disadvantage of Disabling interrupts, (the hardware solution to the critical region problem) is correct? \*

1/1

Permit process use command privileges: Danger!

If process is locked in Critical Section: System Halt

All of the other choices

Don't ensure Mutual Exclusion for the system with N CPUs -

C

How many percent is CPU utilization, when a computer system has enough room to hold two program and these programs are idle waiting for I/O 10% of the time? \*

1/1

1%

99%

None of the other choices

90% -

B

What is the purpose of process synchronization? \*

0/1

Avoid race condition

None of the other choices

Let different users run different processes independently

Avoid deadlock -

A

Which of the following operating system has the concept of a process hierarchy? \*

0/1

Win32

CP/M

MS-DOS

Unix -

D

OS Windows use system call\_\_\_\_\_, while OS Unix use system call\_\_\_\_\_ to terminate processes normally \*

1/1

terminate; ExitProcess

exit; ExitProcess

ExitProcess; exit

ExitProcess; terminate -

C

Which of the following process state transitions is correct, when the scheduler picks a process from the ready queue to run? \*

1/1

Running -> ready

Ready -> running

Blocked (waiting) -> ready

Running -> Blocked (waiting) -

B

In a single processor system, mutual exclusion can be guaranteed by:

1/1

Overlapping processes

Interleaving processes

Disabling interrupts

All of the other choices -

C

In order to implement mutual exclusion on a critical resource for competing processes, only one program at a time should be allowed: \*

1/1

None of the other choices

To exhibit cooperation

To perform message passing

In the critical region of the program -

D

Which of the following process state transitions is illegal? \*

1/1

Blocked (waiting) -> ready

Ready -> Blocked (waiting)

Running -> Blocked (waiting)

Running -> ready -

B

Which of the following conditions that causes the processes to be terminated, when a processes have done their work? \*

1/1

Normal exit (voluntary )

Error exit (voluntary)

Fatal error (involuntary)

Killed by another process (involuntary) -

A

Which of the following is not correct about user-level threads? \*

1/1

User-level threads are more efficient than kernel threads, in the sense that they do not need kernel calls to switch among threads

With user-level threads, customized scheduling algorithms cannot be implemented

User-level threads cannot be preempted by clock interrupts unless the whole process' quantum has been used up

If one user-level thread makes a blocking system call, the system will block the entire process (which contains that user-level thread) -

B

Which of the following about Atomic action is true? \*

1/1

Possibly going to sleep

All of the other choices

Checking the value  
Changing the value -

B

A entry of the Process table is called: \*  
1/1

Process control block  
Process management block  
All of the other choices  
Process check block -

A

What is Software proposal in the solution  
of Mutual exclusion with Busy waiting \*  
1/1

Peterson's Solution  
All of the other choices  
Lock Variables  
Strict Alternation -

B

Which conditions of mutual exclusion does  
the Lock Variables (Software proposal )  
violate \*

1/1  
No assumptions made about speeds or  
numbers of CPUs  
No two processes simultaneously in  
critical region  
No process must wait forever to enter its  
critical region

No process running outside its critical  
region may block another process -

B

A process where no concurrency inside  
process; everything happens sequentially  
is called: \*

1/1  
Random access process  
Sequential process  
Sequential access process  
None of the other choices -

B

When selecting the proper time quantum it  
should be long enough to allow \_\_\_\_\_  
percent of the CPU cycles to run to  
completion \*

1/1  
40  
100  
80  
20 -

C

Five batch jobs A through E, arrive at a  
computer center at almost the same time.  
They have estimated running times of 8, 6,  
2, 10, and 4 minutes. Determine the  
average waiting time for SJF (Shortest job  
first) scheduling. Ignore process switching  
overhead. \*

0/1  
18.8 minutes

6 minutes  
8 minutes  
14 minutes -

C

Five batch jobs A through E, arrive at a computer center at almost the same time. They have estimated running times of 8, 6, 2, 10, and 4 minutes. . Determine the average turnaround time for FCFS scheduling. Ignore process switching overhead. \*

1/1  
20 minutes  
18 minutes  
17 minutes  
18.8 minutes -

D

How many percent is CPU utilization, when a computer system has enough room to hold two program and these programs are idle waiting for I/O half the time? \*

1/1  
75%  
50%  
25%  
None of the other choices -

A

A computer has 2GB RAM of which the operating system occupies 1GB. The processes are all 450 MB and have the

same characteristics. How many percent of the CPU time is wasted, when these programs are idle waiting for I/O 20% of the time? \*

0/1  
90%  
None of the other choices  
4%  
96% -

C

How many ways are Thread implemented? \*

1/1  
3  
2  
1  
4 -

A

What is not a field in the process table that relates memory management? \*

0/1  
Pointer to data segment info  
Pointer to stack segment info  
Pointer to text segment info  
Pointer to program segment info -

D

Which is the correct description of transitions between process states below? (see picture) \*



1/1

Captionless Image

1: Process blocks for input; 2: Input becomes available; 3: Scheduler picks another process; 4: Scheduler picks this process

1: Process blocks for input; 2: Scheduler picks this process; 3: Scheduler picks another process; 4: Input becomes available

1: Process blocks for input; 2: Input becomes available; 3: Scheduler picks this process; 4: Scheduler picks another process

1: Process blocks for input; 2: Scheduler picks another process; 3: Scheduler picks this process; 4: Input becomes available -

D

A computer has 2GB RAM of which the operating system occupies 1GB. The processes are all 450 MB and have the same characteristics. How many percent is CPU utilization when these programs are idle waiting for I/O 20% of the time? \*

1/1

90%

None of the other choices

96%

4% -

C

Which of the events that causes the processes to be created, when a running process creates one or more new process to help it to do its job? \*

1/1

Execution of a process creation system call

Initiation of a batch job

User request to create a new process

System initialization -

A

The following requirement must be met by any facility or capability that is to provide support for mutual exclusion: \*

1/1

Only one process at a time can be allowed into a critical section

No assumption can be made about relative process speeds

All of the other choices

A process remains in its critical region for a finite time only -

C

Which is a advantage of implementing threads in the kernel? \*

1/1

None of the other choices

Is good for multiprocessor architecture and if one thread is blocked does not cause the other thread to be blocked

If one thread is blocked does not cause the other thread to be blocked

Is good for multiprocessor architecture -

B

Critical Region (Section) concept used in interprocess communication is: \*

1/1

A part of shared memory

None of the other choices

A part of the program where the shared memory is accessed

A part of shared data -

C

OS Win32 use system call\_\_\_\_\_, while OS Unix use system call\_\_\_\_\_ to create a new process \*

1/1

fork, CreateProcess

CreateProcess; fork

copy, CreateProcess

CreateProcess; copy -

B

Which statement about disabling interrupts to resolve race conditions is wrong? \*

1/1

A. Disabling/enabling interrupts may negatively affect the I/O system

B. User-mode programs are the best place to invoke disableInterrupt()

C. In theory, a program can disable interrupts when it enters a critical section, and re-enable interrupts when finished with a critical section, to eliminate race conditions

D. Programs with infinite loops in their critical sections are a significant problem with the interrupt-based approach -

B

Which of the events that causes the processes to be created, when an operation system is booted? \*

1/1

System initialization

Execution of a process creation system call

User request to create a new process

Initiation of a batch job -

A

Which of the following process state transitions is legal? \*

1/1

Blocked (waiting) -> running

Ready -> Blocked (waiting)

None of the other choices

Running -> ready -

D

Which of the following process state transitions is correct, when the external event for which a process was waiting happens? \*

1/1

Running -> Blocked (waiting)

Running -> ready

Ready -> running

Blocked (waiting) -> ready -

D

Which of the following process state transitions is correct, when the operating system discovers that process can not continue right now because of is not enough resource? \*

1/1

Running -> ready

Blocked (waiting) -> ready

Ready -> running

Running -> Blocked (waiting) -

D

Which of the following statements about semaphores is true? \*

1/1

If several processes attempt a P(S) operation simultaneously, only one process should be allowed to proceed.

A semaphore implementation should guarantee that processes do not suffer indefinite postponement.

All of the other choices

P and V (Down and Up) operations should be indivisible operations -

C

Which of the following conditions must be held to provide good solution for mutual exclusion? \*

1/1

No process running outside its critical region may block another process

No process must wait forever to enter its critical region

No two processes simultaneously in critical region

All of the other choices

No assumptions made about speeds or numbers of CPUs -

D

In terms of disk storage efficiency, the method of "Backing up pages dynamically" in comparison with the method of "Paging to a static swap area" is \*

0/1

Nearly equal

Better

Equal

Worse -

B

A well-known operating system for Handheld Computer is: \*

1/1

e-COS

TinyOS

Symbian OS and Palm OS

MS-DOS -

C

Critical Region (Section) concept used in interprocess communication is: \*

1/1

None of the other choices

A part of shared data

A part of shared memory

A part of the program where the shared memory is accessed -

D

occupies 4 bytes, what is the size of the page table? \*

1/1

4 MB

8 MB

2 MB

1 MB -

When there is an excessive amount of page swapping between main memory and secondary storage, the operation becomes inefficient, which is called \_\_\_\_\_. \*

1/1

excessive demand paging

over swapping

hot swapping

thrashing -

D

A

Which of these statements about the Inverted Page Table are true? \*

1/1

An entry contains the pair (process, offset) mapped into the corresponding page frame

An entry contains the pair (segment, virtual page) mapped into the corresponding page frame

An entry contains the pair (process, virtual page) mapped into the corresponding page frame

An entry contains the pair (segment, offset) mapped into the corresponding page frame -

Suppose a virtual address space of  $2^{24}$  words and the page size is  $2^{12}$  words. If the virtual address is 123456 in Hexadecimal, what would be the page number in Hexadecimal? \*

1/1

12345

1234

123456

123 -

D

C

In terms of speed the best method of Dynamic Storage-Allocation is: \*

1/1

Worst fit

Best fit

Next fit

First fit -

A system with 32 bit virtual address. If the page size is 4 KB and each table entry

D

A process where no concurrency inside process; everything happens sequentially is called : \*

1/1

None of the other choices

Sequential access process

Sequential process

Random access process -

C

What is not a field in the process table that relates process management? \*

1/1

CPU time used

PC, PSW, SP

User ID, Group ID

Process ID -

C

Which of the following process state transitions is correct, when the external event for which a process was waiting happens? \*

1/1

Ready -> running

Running -> Blocked (waiting)

Blocked (waiting) -> ready

Running -> ready -

C

Which is the maximum partition size, if the FAT type is FAT-32 and the block size is 4 KB? \*

1/1

256 MB

1 TB

512 MB

128 MB -

B

Where should be put the page replacement algorithm In Mach model of Page fault handling with an external pager? \*

0/1

In the page fault handler that is part of the kernel

In the external pager running in user space

All of the other choices

In the low-level MMU handler -

B

Consider a computer system that has cache memory, main memory (RAM) and disk, and OS uses virtual memory. It takes 1 nsec to access a byte from the cache, 10 nsec to access a byte from RAM, and 5 msec to access a block of 1000 bytes from the disk. If a book has 1000 pages, each with 25 lines of 80 characters each, How long it will take to electronically scan the text for the case of the master copy being in each of the level as one proceeds down the memory hierarchy (from inboard memory to offline storage)? \*

1/1

4 msec, 40 msec, 20 sec

1 msec, 10 msec, 5 sec

2 msec, 20 msec, 10 sec

1 msec, 10 msec, 10 sec -

C

What is correct about trap instructions and interrupts? \*

1/1

An interrupt is caused by an external event

Trap instruction switches the execution mode of a CPU from the user mode to the kernel mode.

A trap instruction is caused by a user program to invoke functions in the OS kernel

All of the other choices -

D

Which of the following operating system has the concept of a process hierarchy? \*

0/1

Win32

CP/M

Unix

MS-DOS -

C

As one proceeds down the memory hierarchy (from inboard memory to offline

storage), which of the following conditions is correct? \*

1/1

Decreasing access time

Increasing capacity

Increasing cost per bit

None of the other choices -

B

Assume that the Page Table below is in effect: Page Number: 0 1 2 3; Page Frame Number: 8 10 5 11. The number of lines per page is 400. The actual memory location for line 1634 is \_\_\_\_\_. \*

1/1

None of the other choices

1634

3

4434 -

A

How many percent of the CPU time is wasted, when a computer system has enough room to hold two program and these programs are idle waiting for I/O half the time? \*

1/1

25%

75%

None of the other choices

50% -

A

Working set model is used for: \*

1/1

Determining whether page replacement is needed

Finding the average number of frames a job will need to run smoothly

All of the other choices

Finding the minimum number of frames necessary for a job so that jobs can be run without "thrashing" -

D

An arrival message causes the system to create a new thread to handle this message. This new thread is called \_\_\_\_\_ \*

1/1

Activator

Upcall

Pop-up

Distributed -

C

What is Higher-level proposal in the solution of Mutual exclusion and Synchronization? \*

1/1

Monitors

Message passing

Disable Interrupts

Peterson's Solution -

A

What is the characteristic of the second generation of operating system? \*

1/1

ICs and multiprogramming

Transistors, batch systems

Vacuum tubes, plug boards

Personal computers, single user, multitasking -

B

What is the main characteristic of real-time operating system? \*

1/1

Multiple CPU

Time-sharing

Time is key parameter

Many I/O devices -

C

LRU replaces the page that has spent the longest time in memory \*

1/1

longest time in memory

shortest time in memory

longest time in memory without being referenced

shortest time in memory without being referenced -

C

Which of the following is not correct about user-level threads? \*

1/1

A. User-level threads are more efficient than kernel threads, in the sense that they do not need kernel calls to switch among threads

B. With user-level threads, customized scheduling algorithms cannot be implemented

C. User-level threads cannot be preempted by clock interrupts unless the whole process' quantum has been used up

D. If one user-level thread makes a blocking system call, the system will block the entire process (which contains that user-level thread) -

B

A computer has four page frames. The time of loading, time of last access, and the R and M bits for each page are as shown below (the times are in clock ticks). Which page will NRU replace?

1/1

Captionless Image

0

1

2

3 -

A

A computer with a 32-bit address uses a two-level page table. Virtual addresses are split into a 9-bit top-level page table field, an 11-bit second-level page table field,

and an offset. How many pages are there in the address space? \*

1/1

$2^{23}$  pages

$2^{20}$  pages

$2^{22}$  pages

$2^{21}$  pages -

B

Which is not true about "Backing up pages dynamically"? \*

1/1

Requires a disk map in memory

Pages do not have fixed swap area on the disk

When a page is swapped out, an empty disk page is chosen on the fly and disk map is updated accordingly

Needs less main memory than the method "Paging to a static swap area" -

D

What is not the technique of implementation for Virtual Memory? \*

1/1

Partition

Segmentation

Paging

All of the other choices -

A



As one proceeds down the memory hierarchy (from inboard memory to offline storage), which of the following conditions is correct? \*

1/1

None of the other choices

Decreasing cost per bit

Decreasing access time

Decreasing capacity -

B

Which of the following actions generates an external interrupt? \*

1/1

A page that does not exist in the main memory is accessed by the virtual storage management.

A system call instruction is executed.

Division by zero occurs.

An input/output operation is completed. -

D

Which is not true about the method of backing store: "Paging to a static swap area"? \*

1/1

The swap area on the disk is as large as the process virtual address space

Calculating the address in swap area requires knowing only where the process' paging area begins

A page that is in memory always have shadow copy on disk

Requires a disk map in memory -

D

The page size that is too small will generate \_\_\_\_ \*

1/1

More difficult to calculate actual position

Very long Page tables

Excessive internal fragmentation

Excessive external fragmentation -

B

Assume jobs A-D arrive in quick succession in the READY queue. Using round robin scheduling (quantum=4), the turnaround time for job B is \_\_\_\_\_. Arrival time: 0 1 2 3; Job: A B C D; CPU cycle: 8 4 9 5 \*

1/1

24

20

22

7 -

D

Which of the following is true about Atomic action on semaphores? \*

1/1

Changing the value

Possibly going to sleep

Checking the value

All of the other choices -

D

Which of the following statements is a hardware solution to the critical region problem? \*

1/1

None of the other choices

Semaphore

Shared memory

TSL -

D

Five batch jobs A through E, arrive at a computer center at almost the same time. They have estimated running times of 8, 6, 2, 10, and 4 minutes. Their (externally determined) priorities are 3, 5, 2, 1, and 4, respectively, with 5 being the highest priority. Determine the average waiting time for Priority scheduling. Ignore process switching overhead. \*

1/1

12,8 minutes

10,8 minutes

54 minutes

16,8 minutes -

B

If there are 128 pages and the page size is 32 K words, what is the length of logical address? \*

1/1

24 bits

26 bits

30 bits

22 bits -

D

Which of the following information bits in the entry of page table is used to indicate locked page? \*

1/1

Modified bit

Caching disabled

Present/absent bit

Referenced bit -

B

The modified/dirty bit is used for the purpose of: \*

1/1

Dynamic allocation of memory used by one process to another

Reduce the average time required to service page faults

None of the other choices

Implementing FIFO page replacement algorithm -

B

What is not a main function of an operating system? \*

1/1

Manage the I/O devices

Provide the users with an extended (virtual) machine

Provide user interfaces

Support virtual memory -

C

Which of following statements about the memory hierarchy is false? \*

1/1

Gigabytes of slow cheap disk storage

None of the other choices

Some medium-speed medium price main memory

Small amount of fast expensive memory-cache -

B

A simple structuring model for monolithic system includes: \*

1/1

All of the other choices

A main program that invokes the requested service procedure

A set of service procedures that carry out the system calls

A set of utility procedures that help the service procedures -

A

Which kind of tables is used in the segmentation? \*

1/1

Local Descriptor Table (LDT )

None of the other choices

Both Global Descriptor Table (GDT) and Local Descriptor Table (LDT )

Global Descriptor Table (GDT) -

C

Consider a swapping system in which the memory consists of the following hole sizes: 10K, 4K, 20K, 15K, 9K. Assume best fit algorithm is used. Which holes are taken for successive segment requests of 8K, 12K, 10K? \*

1/1

10K, 15K, 20K

10K, 20K, 15K

20K, 15K, 10K

9K, 15K, 10K -

D

In some thread systems, a thread want be blocked until an other thread has exited. It can establish this goal by calling\_\_\_\_\_ \*

1/1

thread\_yield

thread\_wait

thread\_create

thread\_exit -

B

Consider a computer system that has cache memory, main memory (RAM) and disk, and OS uses virtual memory. It takes 1 nsec to access a byte from the cache, 10 nsec to access a byte from RAM, and 5 msec to access a block of 1000 bytes from the disk. If a book has 1000 pages, each with 50 lines of 80 characters each, How long it will take to electronically scan the

text for the case of the master copy being in each of the level as one proceeds down the memory hierarchy (from inboard memory to offline storage)? \*

1/1

4 msec, 40 msec, 20 sec

1 msec, 10 msec, 10 sec

2 msec, 20 msec, 10 sec

1 msec, 10 msec, 5 sec -

A

Which of the following is a preemptive scheduling algorithm? \*

1/1

Round Robin

None of the other choices

Shortest Job First

FCFS -

A

Which of the following instructions should be allowed in user mode? \*

1/1

Disable all interrupts

Read the time-of-day clock

Change the memory map

Set the time-of-day clock -

B

Examples of general purpose stored program computers include the following except \*

1/1

Network servers

Workstations

MP3 player

Personal computers -

C

When a virtual memory system manages memory in fixed length units, which of the following terms correctly represents its unit? \*

1/1

Segment

Block

Frame

Page -

D

At which level in Protection Rings on the Pentium the System calls reside? \*

1/1

0

2

1

3 -

C

The Mach model of Page fault handling with an external pager includes? \*

1/1

All of the other choices

An external pager running in user space

3

A low-level MMU handler

1 -

A page fault handler that is part of the kernel -

C

A

If there are 256 pages and the page size is 4K words, what is the length of logical address? \*

Which of the following information bits in the entry of page table is used to indicate that page is changed since it was loaded in memory? \*

1/1

20 bits

14 bits

17 bits

15 bits -

1/1

Modified bit

Status bit

Present/absent bit

Referenced bit -

A

A

Which of the following is not correct about hard links? \*

0/1

Which strategy is a simplest design for speeding up Paging? \*

Hard links require to increase the link count in the i-node for each linking

Hard links can point to files in the network

Hard links do not require extra disk space

Hard links can only point to files on the same machines -

1/1

Page table is loaded into TLB

Page table is loaded into main memory

Page table is loaded into registers

Page table is loaded into disk -

b

C

\_\_\_\_\_ is a specialized WRITE command for existing data files that allows for adding records to end of the file. \*

1/1

UPDATE

REWRITE

APPEND

How many level of scheduling are used in computer? \*

1/1

2

4

MODIFY -

c

Which of the following is correct about symbolic links? \*

1/1

Symbolic links need not space to store the name and the file pointed to

Symbolic links can only point to files on the same machines

Symbolic links can point to files in the network

None of the other choices -

c

The primary disadvantage of contiguous storage is that \_\_\_\_\_. \*

1/1

It is difficult to find information in files

It is hard to implement and manage

File can't be expanded unless there is empty space available immediately following it

It is an inefficient use of space -

c

Which solution is used to solve the "missing block" problem in file system consistency? \*

1/1

The file system checker adds the missing blocks to the free list

The file system checker rebuilds the free list

The file system checker allocate the free block, then copy the duplicate block in used to there

None of the other choices -

a

A \_\_\_\_ is a group of related records that contains information to be used by specific application programs to generate reports. \*

1/1

Record group

Field

Directory

File -

d

A directory in UNIX/Linux consists of the following \*

1/1

None of the other choices

File name, file size, location of the file on disk, date created, owner ID

Inode number and file name

File name, file size, location of the file on disk -

c

Which of the following is not a well-known technique for organizing the physical storage blocks for a file? \*

1/1

Contiguous block allocation

Linked list block allocation

Sparse block allocation

Indexed block allocation -

c

\_\_\_\_\_ allocation allows files to use any storage space available on the disk. \*

1/1

Noncontiguous storage

Add-on storage

Contiguous storage

Fragmented storage -

a

What is incorrect about contiguous allocation of files? \*

1/1

It leads to excellent read performance

It is simple to implement

It is widely used on CD-ROMs

It does not cause disk fragmentation -

d

Which of the following is not file structure? \*

1/1

Byte sequence

Record sequence

Ring

Tree -

c

\_\_\_\_\_ is a specialized WRITE command for existing data files that allows for appending records or for rewriting selected records in their original place in the file. \*

1/1

REWRITE

UPDATE

APPEND

MODIFY -

d

How many is maximum number of partition that most disk can be divided up into? \*

1/1

4

3

5

2 -

a

The disk block in a partition that includes a magic number, the number of blocks in the file system and other key administrative information is called: \*

1/1

Superblock

MBR

All of the other choices -

Free block

Boot block -

b

a

Which is the maximum partition size, if the FAT type is FAT-16 and the block size is 2 KB? \*

Which of the following is not special file? \*

0/1

1/1

256 MB

Block special file

512 MB

Character special file

8 MB

None of the other choices

128 MB -

Stream special file -

d

d

Which of a system call is to allow the file to appear in more than one directory? \*

Which of the following is true about the block size in disk space management \*

1/1

1/1

OPEN

the larger the block size is the worse the disk space utilization is

CREATE

the larger the block size is the lower the data rate is

LINK

the larger the block size is lesser the disk space is

SEEK -

None of the other choices -

c

a

\_\_\_\_\_ are special files with listings of filenames and their attributes. \*

1/1

The absolute pathname of a file in Linux is with respect to the \*

Databases

1/1

Programs

Login directory

Data files

Root directory on the system

Directories -

Home directory

d



How large is the block size, if the maximum partition size is 128 MB and the FAT type is FAT-16? \*

0/1

8 KB

2 KB

1 KB

4 KB -

b

The disk blocks in a partition that contains the top of the file system tree is called: \*

1/1

Free space management blocks

Superblock

Root directory

Boot block -

c

The special files are: \*

1/1

none of the other choices

character special file and block special file

character special file

block special file -

b

Which of a system call is to allow the system free up internal table space? \*

1/1

OPEN

DELETE

SEEK

CLOSE -

d

Which method is used to implement files to keep each file as a linked list of disk blocks? \*

1/1

File Allocation Table

Linked List Allocation

i-node

Contiguous Allocation -

b

Which of the following is not correct about hard links and symbolic links? \*

1/1

Hard links can point to files on other machines

Hard links do not require extra disk space

Symbolic links need space to store the name and the file pointed to

Symbolic links can point to files in the network -

a

Which are allocation methods of disk blocks for files: \*

1/1

Contiguous allocation

All of the other choices

Indexed allocation

Linked allocation -

b

How large is the block size, if the maximum partition size is 8 MB and the FAT type is FAT-12? \*

0/1

1 KB

8 KB

2 KB

4 KB -

c

Increasing file system performance is implemented by \_\_\_\_\_ \*

1/1

Block Read Ahead

All of the other choices

Defragmenting Disks

Buffer cache -

b

Which of a system call is to allow the system fetch the attributes and list of disk addresses into main memory for rapid access on later call? \*

1/1

RENAME

CLOSE

OPEN

SEEK -

c

The File Manager writes the volume name and other descriptive information on an easy-to-access place on each unit: \_\_\_\_\_ of the magnetic disk \*

1/1

the innermost part

the outermost part

stored at the beginning of the volume

immediately following the master file directory -

b

Strategy used for dumping a disk to tapes is: \*

1/1

Physical dump and Logical dump

Physical dump

None of the other choices

Logical dump -

a

Which of the following information contain in the entry of the partition tables ? \*

1/1

Starting and ending address of each partition

None of the other choices

Marking a partition as active

Starting and ending address of each partition and Marking a partition as active

-

c

d

The Linking technique that allows the file to appear in more than one directory are: \*

1/1

Disk can be divided up into one or more partitions the first block of every partition is called: \*

Hard link

Symbolic link

1/1

Hard link and Symbolic link

MBR

Soft link -

Free block

Super block

c

Boot block -

d

Which of a system call is to allow the system announce that the file is coming and set some of the attributes? \*

1/1

Which of the following is specified to indicate the directory where the file is located? \*

RENAME

CREATE

1/1

CLOSE

Sub-directory

OPEN -

Extension

Path name

b

Root directory -

c

Which is the maximum partition size, if the FAT type is FAT-32 and the block size is 4 KB? \*

0/1

File is generally defined to be: \*

1 TB

1/1

1 GB

A collection of related fields

16GB

A basic element of data

16 TB -

A collection of similar records

None of the other choices -

A

Which of a system call is to allow the system to specify from where to take the data in file? \*

1/1

OPEN

CREATE

SEEK

LINK -

c

Which is the maximum partition size, if FAT type is FAT-12 and the block size is 2 KB? \*

1/1

8 MB

128 MB

256 MB

512 MB -

a

Operating system MS-DOS is implemented in which of the following allocation methods? \*

1/1

Linked allocation using FAT

Linked allocation

Contiguous allocation

Indexed allocation -

a

Which of the following is true about the data rate for disk management? \*

1/1

the larger the block size is lesser the disk space is

the larger the block size is the lower the data rate is

None of the other choices

the larger the block size is the faster the data rate is -

d

Which ways are used to keep track of free block in disk space management? \*

1/1

A bitmap method

A linked list method and bitmap method

None of the other choices

A linked list method -

b

A table in main memory storing linked list allocation of disk blocks is called: \*

1/1

Linked list table

File list table

Disk allocation table

File allocation table -

d

Many computer users and some operating systems call subdirectories \_\_\_\_\_. \*

1/1

Folders

Volumes

Files

Databases -

a

Which of a system call is to allow the system free up disk space? \*

1/1

OPEN

CLOSE

SEEK

DELETE -

d

File Structure can be: \*

1/1

Record sequence

All of the other choices

Tree

Byte sequence -

b

The Joliet Extensions provide \_\_\_\_\_ \*

1/1

Long file name is supported Unicode character

Directory nesting deeper than 8 levels

All of the other choices

Directory names with extensions -

c

Which part of a disk is used to boot the computer? \*

1/1

MBR

Root block

Super block

Free block -

a

The i-nodes are used in which of the following allocation methods? \*

0/1

Linked allocation using FAT

Contiguous allocation

Linked allocation

Indexed allocation -

d

Which mechanism is implemented by writing to the log file in file system management and optimization? \*

1/1

Journaling File Systems

None of the other choices

Virtual File Systems

Log-Structured File Systems -

a

As long as users refer to files in the \_\_\_\_\_ directory, they can access their files without entering the complete name from the highest level to the lowest. \*

1/1

Default

Working

Root

Home -

b

The File Manager writes the volume name and other descriptive information on an easy-to-access place on each unit: \_\_\_\_\_ of the CD or DVD \*

1/1

stored at the beginning of the volume

the innermost part

the outermost part

immediately following the master file directory -

b

A UNIX or Linux system might identify a file as: /usr/imfst/flynn/inventory.doc. What represents the root directory is \_\_\_\_\_. \*

1/1

/

flynn

usr

imfst -

/

Which of the following actions generates an external interrupt? \*

1/1

An input/output operation is completed.

A page that does not exist in the main memory is accessed by the virtual storage management.

A system call instruction is executed.

Division by zero occurs. -

a

A operation concerning Stable Storage is: \*

1/1

Crash recovery

All of the other choices

Stable writes

Stable reads -

b

When an external device becomes ready to be serviced by the processor, the device sends this signal to the processor. This signal is called: \*

1/1

Handler signal

Halt signal

None of the other choices

Interrupt signal -

d

What's asynchronous transfer in principles of I/O software? \*

1/1

The CPU starts the transfer and goes off to do something else until the interrupt arrives

The user program starts system call to transfer and automatically suspended until the data are available in the buffer

None of the other choices

The user process makes system call and goes to sleep until other process it wakes up -

a

A computer uses a programmable clock in square-wave mode. If 500 MHz crystal is used, what should be the value of the holding register to achieve a clock resolution of 1 msec (clock tick)? \*

1/1

5,000,000

50,000,000

50,000

500,000 -

d

Which class of I/O devices that Scanner belong to? \*

1/1

Stream devices

Character devices

None of the other choices

Block devices -

b

An example of a I/O character devices is \*

1/1

All of the other choices

Modem

Disks

CD ROM -

b

Which of the following statements about device drivers is incorrect? \*

1/1

In the I/O software architecture, the device drivers layer lie right above the hardware, and below the interrupt handlers layer

None of the other choices

Most operating systems expect device drivers to be part of the kernel

A device driver is a set of device-specific code for controlling the I/O device attached to a computer -

a

Which class of I/O devices that keyboard belong to? \*

1/1

Character devices

Stream devices

Block devices

None of the other choices -

a

Which is the right order between the 4 I/O software layers? \*

1/1

User-level I/O software, Device drivers, Interrupt handlers, Device-independent OS software

Device-independent OS software, user-level I/O software, Device drivers, Interrupt handlers

User-level I/O software, Interrupt handlers, Device drivers, Device-independent OS software

User-level I/O software, Device-independent OS software, Device drivers, Interrupt handlers -

d

Which of the following statements is not correct about "device independence"? \*

1/1

Files and devices are accessed in the same way, independent of their physical nature

Device independent interfaces should be given to programmers

A system has to maintain only one set of system calls for both writing on a file and writing on the console

Device independence requires all programmers to deal with different devices directly -

d

Programmed I/O should be acceptable for which of the following systems? \*

1/1

Embedded systems

Interactive systems

Multiprogramming systems

None of the other choices -

d

Which of the following I/O software is done by Device drivers? \*

1/1

None of the other choices

Writing commands to the device registers

Converting binary integers to ASCII for printing

Checking to see if the user is permitted to use the device -

b

Imagine that a certain printer can print 400 characters per second and that the time to write a character to the printer's output register is so short it can be ignored. If to run this printer using interrupt-driven I/O and each character printed requires an interrupt that takes 50  $\mu$ sec all-in to service. How many percent of the CPU does the interrupt overhead cost? \*

1/1

98% of the CPU

4% of the CPU

2% of the CPU

96% of the CPU -



c

Which of the following I/O software is done by Device-independent OS software \*

1/1

Checking to see if the user is permitted to use the device

Computing the track, sector, and head for a disk read

Writing commands to the device registers

Converting binary integers to ASCII for printing -

a

Which of the following statements about the task of device controller of I/O devices is correct ? \*

1/1

Make available to main memory

All of the other choices

Perform error correction as necessary

Convert serial bit stream to block of bytes -

b

The term \_\_\_\_\_ characterizes a system configuration that includes an I/O module that is a separate processor with a specialized instruction set. \*

1/1

Programmed I/O

None of the other choices

DMA

I/O device -

c

Imagine that a certain printer can print 400 characters per second and that the time to write a character to the printer's output register is so short it can be ignored. If to run this printer using interrupt-driven I/O and each character printed requires an interrupt that takes 50  $\mu$ sec all-in to service. How many percent of the CPU is available to do other work? \*

1/1

98% of the CPU

96% of the CPU

2% of the CPU

4% of the CPU -

a

In separating I/O and memory space system, the set of I/O ports form the "I/O port space". This mechanism allows: \*

1/1

Both programs in user space and kernel can access to I/O devices

None of the other choices

Only programs in kernel can access to I/O devices

Programs in user space can easily access to I/O devices -

c

Which approach is used in order to CPU communicate with the control registers of the I/O device? \*

1/1

Memory-mapped I/O

Separating I/O and memory space

All of the other choices

Hybrid: separating I/O and memory space and memory-mapped I/O -

c

Which of the following statements is not correct about the device controller of I/O devices? \*

1/1

Is electronic component of device

Is software component of device

Can handle two, four, or even eight identical devices

Is also called adapter -

b

Imagine that a certain modem can read 7,000 characters per second and that the time to read a character to the modem register is so short it can be ignored. If to run this modem using interrupt-driven I/O and each character read requires an interrupt that takes 10  $\mu$ sec all-in to service. How many percent of the CPU does the interrupt overhead cost? \*

1/1

93% of the CPU

4% of the CPU

7% of the CPU

96% of the CPU -

c

Rearrange the layers in I/O software starting at the bottom: 1. User-level I/O software; 2. Device drivers; 3. Interrupt handlers; 4. Hardware; 5. Device-independent OS software. \*

1/1

43251

12345

15234

54321 -

a

Which of the following statements is incorrect? \*

1/1

A hard drive is an example of a I/O character device

In the interrupt-driven I/O technique, the processor issues an I/O request, continues with other work and eventually receives notification that the request was fulfilled

The term data rate refers to the speed with which data moves to and from the individual I/O device

None of the other choices -

a

Which of the following statement is not true about separating I/O and memory space? \*

1/1

Programs must use 2 instructions to test whether the device is ready

There is special protection mechanism to keep user processes from performing I/O

Caching a device control register would be disastrous

Device drivers must be written using assembly language -

c

In order that CPU communicates with the control registers in the devices, the control register is assigned: \*

1/1

Index

I/O address

I/O port number

None of the other choices -

c

An example of a I/O block devices is \*

1/1

All of the other choices

CD ROM

Modem

Printer -

b

Which class of I/O devices that Clock belong to? \*

1/1

Stream devices

Block devices

Character devices

None of the other choices -

d

Which of the following statements about interrupts and trap instructions is incorrect? \*

1/1

A trap instruction is a software-generated interrupt

None of the other choices

An interrupt is a hardware-generated change of control flow within the system

An interrupt handler deals with the cause of the interrupt -

b

Which of the following is not correct about the main classes of I/O devices? \*

1/1

Block devices and Character devices

Block devices

Character devices

Stream devices -

d

DMA operations require the following information from the processor \*

1/1

Number of words to be read or written

Address of I/O device

Starting memory location to read from and write to

All of the other choices -

d

In general, which is the best technique for I/O Data transfer? \*

1/1

Direct Memory Access

Programmed I/O

Interrupt-Driven I/O

None of the other choices -

a

Assuming that it takes 10 nsec to copy a byte, how much time, does it take to completely rewrite the screen of a 200 character x 20 line text mode memory-mapped screen? \*

0/1

10 micro-sec

40 micro-sec

20 micro-sec

30 micro-sec -

b

The main classes of I/O devices are? \*

1/1

Block devices and Character devices

Character devices

Block devices

Stream devices -

a

Which mechanism is described as "the device controller sneaks in and steals an occasional bus cycle from the CPU once in a while, delaying it slightly"? \*

1/1

All of the others

Cycle stealing

Cycle sneaking

Interrupt stealing -

b

In the hierarchical structure for managing I/O, which layer is closest to the hardware? \*

1/1

Device-independent OS software

None of the other choices

Interrupt handlers

Device drivers -

c

Which of the following statements is incorrect about I/O using DMA? \*

1/1

DMA is software solution to speed up data transfer between I/O device and memory

DMA helps reduce the number of interrupts

DMA helps free up the CPU during the I/O to do other work

None of the other choices -

a

Which of the following statements about device drivers is correct? \*

1/1

None of the other choices

Device drivers lie on top of I/O software layer architecture

Device drivers layer lies right above the interrupt handlers layer and below the device-independent OS software layer

Device drivers lie on bottom of I/O software layer architecture -

c

Device Driver is normally written by: \*

1/1

All of the other choices

Computer's Manufacturer

OS's Manufacturer

Device's Manufacturer -

d

How much cylinder skew is needed for a 3600- RPM (rotate per minute) disk with the track-to-track seek time of 1 msec? The disk has 200 sectors of 512 bytes on each track. \*

1/1

24 sectors

18 sectors

36 sectors

12 sectors -

d

Which of the following statements is not correct about DMA ? \*

1/1

DMA helps reduce the number of interrupts (in comparison with interrupt-driven I/O)

DMA controller has access to the system bus independent of the CPU

The operating system can only use DMA if the hardware has a DMA controller

DMA controller is usually faster than CPU -

d

What is the table where its entry contains the memory address of Interrupt service routine \*

1/1

Address table

Address lines table

Interrupt vector table

Interrupt table -

c

Each device attached to your computer comes with a special program called a \_\_\_\_\_ that facilitates the communication between the device and the OS. \*

1/1

device driver

communication utility

device configurator

translator -

a

Which of the following statements about interrupts and system calls is incorrect? \*

1/1

Interrupts are caused by external events

Interrupts are asynchronous

System calls are caused by internal (synchronous) events

None of the other choices -

d

Imagine that a certain modem can read 7,000 characters per second and that the time to read a character to the modem register is so short it can be ignored. If to run this modem using interrupt-driven I/O and each character read requires an interrupt that takes 10  $\mu$ sec all-in to service. How many percent of the CPU is available to do other work? \*

1/1

7% of the CPU

93% of the CPU

96% of the CPU

4% of the CPU -

b

Assuming that it takes 10 nsec to copy a byte, how much time, does it take to completely rewrite the screen of an 80 character x 25 line text mode memory-mapped screen? \*

0/1

20 micro-sec

30 micro-sec

10 micro-sec

40 micro-sec -

a

Which of the following statement is correct about a disadvantage of memory-mapped I/O? \*

1/1

Programs can use 1 instruction to test whether the device is ready

No special protection mechanism needed to keep user processes from performing I/O

Since the control registers of devices are mapped into the memory space, device drivers can be written in C

Caching a device control register would be disastrous -

d

How many categories can be the I/O devices roughly divided into? \*

1/1

1

2

3

4 -

b

Which class of I/O devices that disks and tapes belong to? \*

1/1

Block devices

Stream devices

Character devices

None of the other choices -

a

Which statement about DMA is incorrect? \*

1/1

The CPU can start a DMA block transfer, and in the mean time do other work

The controller does not need to wait for the CPU to transfer data to/from memory

The CPU needs not to be concerned with the time it takes to transfer data

It is always true that DMA is less expensive than CPU-mediate data transfers -

d

The I/O technique where the processor busy waits for an I/O operation to complete is called: \*

1/1

Direct Memory Access (DMA)

Programmed I/O

Interrupt-driven I/O

None of the other choices -

b

In the memory-mapped I/O system, in order that CPU communicates with the control registers in the devices, the control register is assigned: \*

1/1

Unique memory address

I/O address

Index

None of the other choices -

a

An example of the key differences that can exist across (and even in) types of I/O devices is: \*

1/1

Error conditions

Data representation

Data rate

All of the other choices -

d

An interrupt that leaves the machine in well-defined state is called a(n) \_\_\_\_\_ \*

1/1

Precise interrupt

Disappointed interrupt

Imprecise interrupt

Required interrupt -

a

Which of the following I/O software is done by User-level software \*

1/1

Computing the track, sector, and head for a disk read

Writing commands to the device registers

Converting binary integers to ASCII for printing

Checking to see if the user is permitted to use the device -

c

What is the correct approach with requesting the dedicated devices to solve deadlock using Ostrich algorithm?

1/1

The device driver decides blocking and returning an error code

The device driver kills those requesting processes

The device driver stops the current jobs and releases the devices

All of the other choices -

a

A simplest way to break a deadlock is to \*

1/1

kill one of the processes

rollback

lock one of the processes

preempt a resource -

a

Which deadlock condition does Request all resources initially attack? \*

1/1

No preemption

Circular-wait condition

Mutual exclusion

Hold and wait -

d

The permanent blocking of a set of processes that compete for system resources is called \*

1/1

None of the other choices

Starvation

Prioritization

Deadlock -

d

If in a resource-allocation graph, each resource type has exactly one instance, which of the following indicate a deadlock situation? \*

1/1

The graph has no cycle.

The graph is not connected.

The graph has at least one cycle.

The graph is connected. -



c

\_\_\_\_\_ is when, in modern printing systems, a disk accepts output from several  
Deadlock occurs on a modern printer when \_\_\_\_\_. \*

1/1

The network connection for the printer overflows with too many requests to use the printer.

The buffer fills up with too many print jobs and the printer cannot decide which one to print.

Too many users attempt to access the printer at the same time.

The printer needs all of a job's output before it will begin printing, but the spooling system fills the available disk space with only partially completed output.

-

d

Which of the following is not a condition necessary for deadlock to exist? \*

1/1

Circular-wait condition

Hold and wait condition

Preemption condition

Mutual-exclusion condition -

c

For matrix-based algorithm to detect deadlock, total number of instances of each resource is given by: \*

1/1

Existing resource vector

Request matrix

Available resource vector

Current allocation matrix -

a

What is the way to recover from a deadlock: \*

1/1

Rollback

Killing processes

All of the other choices

Preempt a resource -

c

What's true about preemptable resources? \*

1/1

Will cause the process to fail if taken away

Can be taken away from a process with no ill effects

Can share among processes

None of the other choices -

b

For matrix-based algorithm to detect deadlock, number of instances of each resource each process needs is given by \*

1/1

Request matrix

Available resource vector

Existing resource vector  
Current allocation matrix -

a

Deadlock definition: "A set of processes is deadlocked if each process in the set is waiting for an event that only another process in the set can cause." What does event mean? \*

1/1

None of the other choices

The event is press some key on keyboard

The event is release of a currently held resource

The event is some mouse click -

c

Which deadlock condition does order resources numerically attack? \*

1/1

Circular-wait condition

Hold and wait

No preemption

Mutual exclusion -

a

For matrix-based algorithm to detect deadlock, number of instances of each resource each process currently holds is given by: \*

1/1

Available resource vector

Existing resource vector  
Request matrix  
Current allocation matrix -

d

An example of preemptable resources is \*

1/1

Memory

CD-ROM device

None of the other choices

DVD device -

a

\_\_\_\_\_ is when each process involved in the impasse is waiting for another to voluntarily release the resource so that at least one will be able to continue on. \*

1/1

Mutual-exclusion condition

No preemption condition

Hold and wait condition

Circular-wait condition -

d

Failure to lock database records before updating them may result in a \_\_\_\_\_ between processes \*

1/1

Race

Struggle

Livelock

Deadlock -

c

a

In a directed graph used to model deadlock, resources are represented using \*

Each of the following characteristics applies to deadlock avoidance except \*

1/1

1/1

Ellipse

Relying on ability to predict effect of satisfying resource allocation requests

Circular

Inherently conservative strategy

Square

Widely used in modern operating systems

Rectangle -

None of the other choices -

c

c

An algorithm designed to detect starvation by tracking how long each job has been waiting for resources is the same concept as \_\_\_\_\_. \*

What's true about non-preemptable resources? \*

1/1

1/1

Aging

Can be taken away from a process with no ill effects

Deadlock

None of the other choices

Preemption

Will cause the process to fail if taken away

Round robin -

Can share among processes -

c

a

What is the correct approach with the Mutual Exclusion condition to prevent Deadlock? \*

\_\_\_\_\_ allows a resource to be held by a process as long as it is needed.. \*

1/1

1/1

Request all resources initially

No preemption condition

Order resources numerically

Circular-wait condition

Spool everything

Mutual-exclusion condition

Take resources away -

Hold and wait condition -

a

A system is said to be in an unsafe state if \*

1/1

The operating system cannot guarantee that all current processes can complete their work

None of the other choices

A process is indefinitely postponed

The system is deadlocked -

a

What is the correct approach with the hold and wait condition to prevent Deadlock? \*

1/1

Take resources away

Spool everything

Request all resources initially

Order resources numerically -

c

In a directed graph used to model deadlock, processes are represented using \*

1/1

Rectangle

Circular

Ellipse

Square -

b

All deadlocks involve conflicting needs for resources by \*

1/1

Three or more processes

None of the other choices

Two or more processes

One or more processes -

c

Dijkstra's Banker's Algorithm require the system to maintain the resource information for each process, including: \*

1/1

a. The maximum resources that can be requested by the process

b. The number of resources currently acquired by the process

c. A count of the system's total resources

d. The maximum resources that can be requested and The number of resources currently acquired by the process -

d

What is the weakness of the Banker's algorithm? \*

1/1

Enabling the number of resources to fluctuate

Enabling processes to hold their resources indefinitely

Requiring that processes state their maximum needs in advance

Allowing the population of processes to vary over time -

c

If a system is deadlocked, no processes can \*

1/1

release resources

be awakened

run

all of the other choices -

d

Which deadlock condition does take resources away attack? \*

1/1

Circular-wait condition

Hold and wait

Mutual exclusion

No preemption -

d

Which method is used to prevent the communication deadlock? \*

1/1

Timeouts

Acknowledge signal

Handling alarm

All of the other choices -

d

For matrix-based algorithm to detect deadlock, number of instances of resource currently unassigned is given by: \*

1/1

Available resource vector

Request matrix

Current allocation matrix

Existing resource vector -

a

In a directed graph used to model deadlock, \_\_\_\_ represents deadlock. \*

1/1

Cycle

Dashed arrow

Solid arrow

Any path -

a

What is the correct approach with the No preemption condition to prevent Deadlock? \*

1/1

Order resources numerically

Spool everything

Request all resources initially

Take resources away -

d

A possibility of deadlock can occur: \*

1/1

If a system is in safe state

If a system is in unsafe state

If a system is in instable state

None of the other choices -

b

\_\_\_\_\_ is when, in modern printing systems, a disk accepts output from several users and acts as a temporary storage area for all output until the printer is ready to accept it \*

1/1

Spooling

Buffering

Lagging

Spoofing -

a

The first and simplest recovery method, and the most drastic, is to \_\_\_\_\_. \*

1/1

Select a nondeadlocked job, preempt the resources it's holding, and allocate them to a Deadlocked process so it can resume execution, thus breaking the deadlock

Terminate every job that's active in the system and restart them from the beginning

Identify which jobs are involved in the deadlock and terminate them one at a time, checking to see if the deadlock is eliminated after each removal

Terminate only the jobs involved in the deadlock and ask their users to resubmit them -

b

Which of the following statements does not apply to manual deadlock management? \*

1/1

Recovery may involves rebooting the system

Deadlock is relatively infrequent for some system resources

OS designers are normally very sensitive to deadlock when designing resource managers

None of the other choices -

c

One of way to prevent a deadlock is \_\_\_\_\_ \*

1/1

Locks one of the processes

Spool everything

Kills one of the processes

Rollback -

b

\_\_\_\_\_ occurs when two processes do not release control of resources they are using. \*

1/1

Hold and wait condition

Circular-wait condition

Mutual-exclusion condition

No preemption condition -

a

A simplest way to break a deadlock is to \*

1/1

Locks one of the processes

Kills one of the processes

Rollback

Preempt a resource -

b

\_\_\_\_\_ is the act of allowing only one process to have access to a dedicated resource. \*

1/1

No preemption condition

Mutual-exclusion condition

Hold and wait condition

Circular-wait condition -

b

Sequence of events required to use a resource is \*

1/1

Use the resource, Release the resource, Request the resource

None of the other choices

Request the resource, Release the resource, Use the resource

Request the resource, Use the resource, Release the resource -

d

Which strategy is used in the Banker's algorithm for dealing with deadlocks? \*

1/1

Deadlock prevention

Deadlock detection

Deadlock avoidance

Deadlock ignorance -

c

Assume the following events and actions take place: 1. P1 requests and is allocated the printer R1; 2. P1 releases the printer R1; 3. P2 requests and is allocated the disk drive R2; 4. P2 releases the disk R2; 5. P3 requests and is allocated the plotter R3; 6. P3 releases the plotter R3. Which of the following statement is true? \*

1/1

There is no deadlock

Event 5 caused deadlock.

Event 6 caused deadlock.

Event 4 caused deadlock -

a

Which deadlock condition does spool everything attack? \*

1/1

Hold and wait

Mutual exclusion

Circular-wait condition

No preemption -

b

A network that's congested or has filled a large percentage of its I/O buffer space can become deadlocked if it doesn't have \_\_\_\_\_ to control the flow of messages through the network. \*

1/1

Protocols

Policies

Procedures

Rules -

a

The scheme of \_\_\_\_\_ removes the possibility of a circular wait and therefore guarantees the removal of deadlocks. \*

1/1

Hierarchical ordering

Preemption

Saving and restoring job state

Requesting all resources before job run -

a

Typical approaches to handle deadlocks do not include: \*

1/1

Avoidance

Prevention

Detection

Deterrence -

d

What is the correct approach with the Circular wait condition to prevent Deadlock? \*

1/1

Take resources away

Request all resources initially

Spool everything

Order resources numerically -

d

What is not the way to recover from a deadlock: \*

1/1

Killing processes

Preempt a resource

Locks one of the processes

Rollback -

c

Which of the following is not a well-known technique for organizing the physical storage blocks for a file?

\*1/1

Indexed block allocation

Contiguous block allocation

Linked list block allocation

Sparse block allocation -

D



There are \_\_\_\_ entries per page in the Page table.

- 1
- 2
- 3
- 4 -

A

Which of the following information bits used by the various page replacement policies indicates if the page has been called lately?

- a. Locality bit
- b. Status bit
- c. Referenced bit
- d. Modified bit -

C

In separating I/O and memory space system, the set of I/O ports form the I/O port space. This mechanism allows:

Programs in user space can easily access to I/O devices

Only programs in kernel can access to I/O devices

Both programs in user space and kernel can access to I/O devices

None of the other choices -

B

Each of the following characteristics applies to deadlock avoidance except \*

A. Widely used in modern operating systems

B. Relying on ability to predict effect of satisfying resource allocation requests

C. Inherently conservative strategy

D. None of the other choices -

A

In the memory-mapped I/O system, in order that CPU communicates with the control registers in the devices, the control register is assigned :

Index

I/O address

Unique memory address

None of the other choices -

C

Which of the following information bits in the entry of page table is used to indicate Page Fault?

Present/absent bit

Status bit

Referenced bit

Modified bit -

A

The page table for each process maintains \_\_\_\_\_ .

A) the physical memory location of the process

B) the frame location for each page of the process

C) the page location for each frame of the process

D) the logical memory location of the process -

B

In separating I/O and memory space system, the set of I/O ports form the I/O port space. This mechanism allows:

A. Programs in user space can easily access to I/O devices

B. None of the other choices

C. Only programs in kernel can access to I/O devices

D. Both programs in user space and kernel can access to I/O devices -

A

Which of the following statements is incorrect about user mode and kernel mode? \*

A. In kernel mode, the OS can execute every instruction in the instruction set

B. Having two modes of operation helps prevent user programs from accessing critical instructions

C. None of the other choices

D. In user mode, user program can execute only a subset of instructions -

c

Assume jobs A-D arrive in quick succession in the READY queue. Using round robin scheduling (quantum=4), the

average turnaround time for each job is \_\_\_\_\_. \*

1 point

18.25

5

73

20 -

Consider a swapping system in which the memory consists of the following hole sizes: 10 K, 4 K, 20 K, 15 K, 9 K. Assume worst fit algorithm is used. Which holes are taken for successive segment requests of 8 K, 12 K, 10 K? \*

1 point

10 K, 20 K, 15 K

9 K, 15 K, 10 K

20 K, 15 K, left over of 20 K

None of the other choices -

C

A computer has four page frames. The time of loading, time of last access, and the R and M bits for each page are as shown below (the times are in clock ticks). Which page will Second Chance replace? \*

1 point

Page -----loaded-----last ref.-----R-----M

0-----226-----280-----0-----0

1-----160-----265-----0-----1

2-----110-----270-----1-----0

3-----120-----285-----1-----1

2

Semaphores

3

Peterson's algorithm -

0

1 -

C

1

In a directed graphs model, a possible of deadlock can occur: \*

The special files are (choose 1 answer only): \*

1 point

None of the others

0/1

If graph contains a cycle and several instances per resource type

character special file

If graph contains a cycle and only one instance per resource type

none of the other choices

If graph contains no cycle -

block special file

character special files and block special files -

C

D

Which of the following statements about segmentation is false? \*

Which strategy is used in the Banker's algorithm for dealing with deadlocks? \*

1 point

The total address space can be more than the size of physical memory

1 point

There are several linear address spaces

Deadlock detection

None of the other choices

Deadlock ignorance

Sharing of procedures between different users can be facilitated -

Deadlock prevention

Deadlock avoidance -

C

D

Which of the following synchronization mechanisms does not rely on busy-waiting? \*

Which of the following conditions of semaphore variable "s" implies a busy critical region? \*

1 point

1 point

Lock variables

$s > 0$

Strict alternation

$s =$

0

$s < 0$

None of the other choices = B

Which of the following systems is used in time-critical environments where data must be processed within a strict time limit? \*

1 point

Embedded

Hybrid

Real-time

Interactive -

C

In which of the following environments preemption is essential? \*

0/1

Interactive

Real time

Batch

None of the other choices -

A

All deadlocks involve conflicting needs for resources by \*

1 point

Three or more processes

One or more processes

None of the other choices

Two or more processes -

D

Which of the following statements is incorrect about Memory-mapped I/O and Programmed I/O? \*

1/1

None of the other choices

Programmed I/O is a way to actually carry out the I/O operations

Programmed I/O may use memory-mapped I/O to fulfill the I/O tasks

Memory-mapped I/O is a way to control the device -

a

Which of the following statements is incorrect about Translation Look-aside Buffer (TLB)? \*

1 point

TLB only maintains a subset of the entries stored in the full memory-based page table

When there is a TLB miss the system needs to access the page table

None of the other choices

The use of TLB eliminates the need for keeping a page table in memory -

D

Which of the following is not correct about the reliability of different RAID levels? \*

1 point

In RAID level 2, a single bit error in a word can be detected AND corrected

There is no reliability support in RAID level 0

All RAID levels can survive one disk crash

In RAID levels 3, 4, 5 a single bit error in a word can be detected -

B

Which of the following statements is incorrect about Translation Look-aside Buffer (TLB)? \*

1 point

- a. A TLB is sometimes known as an associative memory
- b. None of the other choices
- c. A TLB miss implies a disk operation will follow
- d. Each entry of a TLB contains the information about one page, including the virtual page number and the corresponding page frame -

C

Which of the following statements is incorrect about I/O using DMA?

1 point

DMA helps reduce the number of interrupts

None of the other choices

In essence, DMA is programmed I/O, except the fact that DMA, instead of the CPU, does all the work

DMA helps free up the CPU during the I/O to do other work -

B

Five batch jobs A through E, arrive at a computer center at almost the same time. They have estimated running times of 8, 6, 2, 10, and 4 minutes. Their (externally determined) priorities are 3, 5, 2, 1, and 4, respectively, with 5 being the highest priority. Determine the mean process average turnaround time for priority scheduling. Ignore process switching overhead . \*

1 point

10,8 minutes

16,8 minutes

54 minutes

12,8 minutes -

B

A page fault means that we referenced a page \*

1 point

- a. with an incorrect I/O request
- b. that was outside the memory boundaries
- c. that was not in main memory
- d. that was not in secondary storage -

C

Which is a wrong statement about the quantum used in Round Robin algorithm? \*

1 point

If the quantum is very large, RR is essentially FCFS

None of the other choices

A reasonable value of quantum is around 20-50 ms

If the quantum is very small, the CPU efficiency is reduced -

B

With paging, when is the internal fragmentation possible? \*

1 point

Such thing cannot happen

The last page of the job is less than the maximum page size

Page does not fit the frame

The virtual memory assigned to the program is less than the physical memory assigned to it -

B

Which of the following is an advantage of Memory-mapped I/O? \*

1 point

a. Since there is only one address space, all I/O devices must examine all memory references to see which ones to response to

b. None of the other choices

c. Since the control registers of devices are mapped into the memory space, device drivers can be written without using Assembly language

d. Using memory-mapped I/O, caching a device control register is not acceptable -

c

A(n) \_\_\_\_\_ is provided to make system calls from some programming languages \*

1/1

procedure library

none of the other choices

pointer

operator -

A

Which RAID level duplicates all the disks? \*

1/1

4

3

2

1 -

D

Which of the following statements is not correct about Graphic adapter? \*

1/1

None of the other choices

Contains a special memory called video RAM

Supports different method of coding pixel color

Supports some number of screen sizes (resolution) -

a

The methods determine where page is on the disk when it is paged out is \*

1/1

Paging to a static swap area

Both Paging to a static swap area and Backing up pages dynamically

None of the other choices

Backing up pages dynamically -

b

Which is not a DVD Improvement on CDs to increase the capacity? \*

1/1

Smaller pits

Diameter of disc

A kind laser (red, blue)

A tighter spiral -

b

Dual-layer, double-sided DVD can hold \_\_\_\_ . \*

1/1

9.4 GB

17 GB

8.5 GB

4.7 GB -

B

Which FAT type is used, if the maximum partition size is 256 MB and the block size is 4KB? \*

1/1

FAT-32

FAT-16

None of the other choices

FAT-12 -

b

Which deadlock condition does "Request all resources initially" attack? \*

1/1

Circular-wait condition

Mutual exclusion

No preemption

Hold and wait -

d

Which of the following is not a task of I/O management of OS? \*

1/1

Manage main memory for the devices using caching, buffering, and spooling

Mapping files onto secondary storage

Maintain and provide a general device-driver interfaces

Drivers for specific hardware devices -

b

The scheduling strategy where each process in the queue is given a certain amount of time. After this time has elapsed, the process is preempted and

added to the end of the ready queue is referred to as: \*

1/1

Prioritization

All of the other choices

LIFO

Round-Robin -

d

In terms of main memory efficiency the method of "Backing up pages dynamically" in comparison with the method of "Paging to a static swap area" is \*

1/1

Better

Worse

Equal

Nearly equal -

b

What is the correct approach with the "No preemption condition" to prevent Deadlock? \*

1/1

Order resources numerically

Spool everything

Take resources away

Request all resources initially -

C

Assuming that it takes 10 nsec to copy a byte, how much time does it take to

completely rewrite the screen of a 1200 x 800 pixels graphics with 24-bit color? \*

1/1

28.8 micro-sec

288 msec

28.8 msec

288 micro-sec -

c

Strategy used for dumping a disk to tapes is: \*

1/1

Both physical dump and logical dump

Physical dump

Logical dump

None of the other choices -

A

Some systems increase the priority of jobs that have been in the system for an unusually long time to expedite their exit, which is known as \_\_\_\_\_.? \*

1/1

Accelerated priority

Bumping

Lagging

Aging -

d

Five batch jobs A through E, arrive at a computer center at almost the same time. They have estimated running times of 8, 6,



2, 10, and 4 minutes. Their (externally determined) priorities are 3, 5, 2, 1, and 4, respectively, with 5 being the highest priority. Determine the average turnaround time for priority scheduling. Ignore process switching overhead. \*

1/1

6 minutes

16.8 minutes

12.8 minutes

18.8 minutes -

B

A computer uses a programmable clock in square-wave mode. If 500 MHz crystal is used, what should be the value of the holding register to achieve a clock resolution of 10 msec (Clock tick)? \*

1/1

50,000,000

5,000,000

500,000

50,000 -

b

Which is not a goal of a scheduling algorithm for batch systems? \*

0/1

CPU utilization

Turnaround time

Response time

Throughput -

c

Which does the power of CPU decrease to if it run at half speed? \*

1/2

1/4

None of the other choices

1/8 -

b

How much cylinder skew is needed for a 7200- RPM (rotate per minute) disk with the track-to-track seek time of 1 msec? The disk has 200 sectors of 512 bytes on each track. \*

1/1

36 sectors

12 sectors

24 sectors

18 sectors -

c

Which solutions are used to solve the shared libraries? \*

1/1

Static reallocation and position-independent code

None of the other choices

Relocation on the fly and position-independent code

Position-independent code -

D

Which is not attribute of MS-DOS file? \*

1/1

Lock

Read-Only

Hidden, System

Archived -

a

To specify an address in this segmented memory, the \_\_\_\_\_ form is used \*

1/1

<physical address, offset>

<virtual address, offset>

<segment-number, offset>

<process, offset> -

c

Which deadlock condition does "Take resources away" attack? \*

1/1

No preemption

Mutual exclusion

Circular-wait condition

Hold and wait -

a

An operation concerning Stable Storage is: \*

1/1

Stable Reads

Crash recovery

Stable writes

All of the other choices -

d

Which ways are used to keep track of free block in disk space management? \*

1/1

Both linked list method and bitmap method

A linked list method

None of the other choices

A bitmap method -

a

Which is space efficiency, if 4KB-file using file system with 8KB-block? \*

1/1

75%

100%

50%

25% -

c

Of the three components of access time in a disk, \_\_\_\_\_ is the longest. \*

1/1

Transfer time

Seek time

Delay time

Search time -

b

Which RAID level employs a Hamming code to correct single bit errors and detect double bit errors? \*

1/1

3

1

4

2 -

d

In modern printing systems, a disk accepts output from several users, Deadlock occurs when \_\_\_\_\_. \*

1/1

- a. The network connection for the printer overflows with too many requests to use the printer.
- b. Too many users attempt to access the printer at the same time.
- c. The printer needs all of a job's output before it will begin printing, but the spooling system fills the available disk space with only partially completed output.
- d. The buffer fills up with too many print jobs and the printer cannot decide which one to print. -

C

Which of the following is an Operating System component? \*

1/1

Process Management

Speed Management

Space Management

Time Management -

a

The Joliet Extensions provide \_\_\_\_\_ \*

1/1

Directory nesting deeper than 8 levels

All of the other choices

Directory names with extensions

Long file name supported Unicode character -

b

An algorithm designed to detect starvation by tracking how long each job has been waiting for resources is the same concept as \_\_\_\_\_. \*

1/1

Preemption

Aging

Round robin

Deadlock -

b

Multiprogramming increases processor efficiency by \*

1 point

Increasing processor speed

Eliminating all idle processor cycles

Taking advantage of time wasted by long wait I/O handling

All of the other choices -

c

Page replacement algorithms determine \*

1 point

when the system should update page table entries

how many pages should be added to main memory

which page to remove to provide space for an incoming page

which pages should be brought into memory because a process is likely to reference them soon -

c

Which of the following process state transitions is illegal? \*

1 point

running -> ready

blocked -> ready

ready -> running

blocked -> running -

d

An example of the key differences that can exist across (and even in) classes of I/O devices is: \*

1 point

All of the other choices

Data rate

Data representation

Error conditions -

a

Which is NOT a file attribute? \*

1 point

Time of Access

Owner

Shape

Size -

c

If in a resource-allocation graph, each resource type has exactly one instance, which of the following indicates a deadlock situation? \*

1 point

The graph has at least one cycle

The graph is not connected

The graph has no cycle

The graph is connected -

a

The \_\_\_\_ is the essential component of the operating system that remains in RAM when your computer is powered on. \*

1 point

system file

registry

core

kernel -

d

A fetched instruction is normally loaded into \*

1 point

None of the other choices

Program Counter

Accumulator

Instruction Register -

d

A file is generally defined to be: \*

1 point

A collection of similar records

A collection of related fields

A basic element of data

All of the other choices -

a

Which of the following is not a CPU scheduling criterion? \*

1 point

Throughput

CPU utilization

Burst time

Response time -

c

The interface between the operating system kernel and the user programs is defined by the set of \_\_\_\_ that the operating system provides \*

1 point

System calls

Processes

Functions

Threads -

A

Which of the following is not a condition for deadlocks? \*

0/1

Hold and Wait

Preemption

Mutual exclusion

Circular Wait -

B

Which of the following information bits in the entry of page table is false? \*

1 point

Protection bit

Present/absent bit

Mode bit

Modified bit -

c

Which of the following information bits in the entry of page table is used to indicate what kinds of access are permitted? \*

0/1

Modified bit

Protection bit

Present/absent bit

Caching disabled -

b