**OSG202 Fall 2021**

1. What is the weakness of the Banker's algorithm?

A.Allowing the population of processes to vary over time B.Enabling processes to hold their resources indefinitely

**C .Requiring that processes state their maximum needs in advance** D.Enabling the number of resources to fluctuate

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

1. Deadlock ignorance
2. Deadlock detection
3. **Deadlock avoidance**
4. Deadlock prevention

Which one of the following is the deadlock avoidance algorithm?

* + 1. Kam's algorithm
    2. Elevator algorithm
    3. **Banker's algorithm**
    4. Round-robin algorithm

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

A. Present/Absent bit

B.Status bit

C.Referenced bit D.Modified bit

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

1. Modified bit
2. Present/absent bit
3. Referenced bit
4. Caching disabled

With respect to structure of a page table entry, which field is used to indicate that this page should not be swapped out?

1. Modified bit
2. Reference bit
3. **Caching disable bit**
4. Protection bits

Which of the following information bits in the Descriptor of GDT or LDT used to indicate that segment is or missed in memory?

1. **P (Present/absent bit)**
2. DPL (Privilege level bits)
3. S (System bits)
4. TYPE (Segment type and protection bits)

3.A system has four processes and five allocated resources. The current allocation and maximum needs are as

follows

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Process | Allocated |  | Maximum |  | Available |
|  |  |  |  |  |  |
| A | 10211 | 11212 |  | 00x11 |  |
| B | 20110 | 22210 |  |  |  |
| C | 11011 | 21311 |  |  |  |
| D | 11010 | 11121 |  |  |  |

What is the smallest value of x for which this is a safe state?

1. 0
2. 1
3. 2
4. 3

for    **A    0  1  0  0  1           B    0  2  1  0  0      C    1  0  3  0  0     D     0  0  1  1  1**

**available is  0  0  x  1  1**

so only D can execute for any no of x as A,B or C need at least one instance of either of first 2 resource

if x=1 then D can be executed and will release its allocated resource which is 1 1 0 1 0 then available matrix will become 1 1 1 2 1(11010+111) but with this neither of (A,B,C ) process can be executed as their need matrix is not less than or equal to available matrix so it will result in unsafe state.

if x=2 then D can be executed and will release its allocated resource which is 1 1 0 1 0 then available matrix will become 1 1 2 2 1(11010+00211) now Process C (with need 1 0 3 0 0 ) can be executed and release its allocated resources(1 1 0 1 1 ) and then available matrix will become 2 2 3 3 2 (11221 + 11011) so B can be executed and then A (assuming some minor mistake in last resource) hence it is safe state

so ans is C x=2

Note :- process A can not be executed for any no of x as its fifth resource need is 2 which can not be fulfilled

4.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):

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 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 |

Which page will Second Chance replace? (*R=0, Last ref : Oldest*)

A.0

1. 1
2. 2
3. 3

# A computer has four page frames. The time of loading, time of last access, and the R and M bits for page are as shown below (the times are in clock ticks):

**0723**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **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** |

**Which page will FIFO replace?**

1. 0
2. 1
3. 2
4. 3

# Assume that process A-D make up the set of runnable processes on memory as B1 B2 B3 A1 A2 A5 A7 D3 D4 D6 C1 C6 C5.

**Suppose D gets a page fault.**

**Which page is replaced using the local policy? Assume that the replaced page is always a last page.**

1. **D6**
2. B3
3. C5
4. None of the others

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):

Page Loaded Last ref R M

----

-- --

-- --

-- -- --- -- -- --

-- ------

0 226 280 0 0

1 160 285 0 1

2 110 270 0 0

3 120 285 0 1

Which page will LRU replace?

1. 0
2. 1
3. 2
4. 3

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):

Page LoadedLast ref. R M

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 0 | 226 | 260 | 0 | 0 |
| 1 | 160 | 266 | 0 | 1 |
| 2 | 110 | 270 | 1 | 0 |
| 3 | 120 | 285 | 1 | 1 |

Which page will NRU replace?

1. 0
2. 1
3. 2
4. 3

5. A process where no concurrency inside process; everything happens sequentially is called:

A Random access process **B.Sequential process**

C. Sequential access process

D.None of the other choices

What is the "sequential processes" concept?

1. There are both many CPU and many PC
2. **No concurrency inside a process; everything happens sequentially**
3. None of the other choices
4. All process is executed in concurrency

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

1. Programmed I/O
2. **Direct Memory Access**
3. Interrupt-Driven I/O
4. Sequential access

6. If i-node contains 10 direct addresses and all disk blocks are 1024 KB**=1MB**, what is largest possible file ( Block\_size \* direct\_address )

1. **10 MB (= 1MB \* 10)**
2. 10 GB
3. 1GB
4. None of the other choices

7: What is asynchronous transfer in principles of I/O software?

1. The user process makes system call and goes to sleep until other process it wakes up.
2. **The CPU starts the transfer and goes off to do something else until the interrupt arrives.**
3. The user program starts system call to transfer and automatically suspended until the data are available in the buffer.
4. None of the other choices

8.How many categories can be the I/O devices roughly divided?

1. 1
2. **2**
3. 3

D.4

9.Which of these statements about the algorithm "Best fit" is true?

1. Memory Manager scans along the list of segments until it finds a hole that is big enough.
2. Memory Manager starting searching the list of segments from the place where it left off last time. (Next-fit)
3. **Memory Manager searches the entire list of segments from beginning to end and take smallest hole that is adequate**
4. None of the other choices

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

1. Next fit
2. Best fit
3. Worst fit
4. First fit

In terms of storage utilization the best method of Dynamic Storage Allocation is:

* 1. Next fit
  2. First fit
  3. Best fit
  4. Worst fit

10.Which of the following is true about Atomic action on semaphores?

* 1. Checking the value
  2. Changing the value
  3. Possibly going to sleep
  4. **All of the other choices**

11.A computer with a 32-bit address uses a two-level page table. Virtual addresses are split into a 10-bit top-level page table field, an 12-bit second-level page table field, and an offset. How large are the pages?

Offset = 32 – 10 – 12 = 10bits

A 4-KB page

1. 2-KB page
2. 1-KB page (210 )
3. 5128 page

A computer with a 32-bit address uses a two-level page table. Virtual addresses are split into a 10-bit top-level

page table field, an 12-bit second-level page table field, and an offset. How large are the pages and how many

are there in the address space?

1. 2^20 pages
2. 2^21 pages
3. 2^23 pages
4. **2^22 pages**

A computer with a 32-bit address uses a 2-level page table. The virtual addresses are split into a 9-bit top-level and an 11-bit second-level page table fields, and an offset. How large are the pages, and how many are there in the address space?

1. **4-KB page**
2. 2-KB page
3. 1-KB page
4. 512B page

12. The interface between the operating system kernel and the user programs is defined by the set of that the operating system provides

1. Functions
2. Threads
3. Processes
4. **System calls**

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

1. APPEND
2. UPDATE
3. REWRITE
4. MODIFY

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. APPEND
2. UPDATE
3. REWRITE
4. **MODIFY**

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

1. LINK
2. CREATE
3. OPEN
4. **SEEK**

Which of a system call is to allow the system fetch the attributes and list of disk addresses in for rapid access on later call?

* 1. OPEN
  2. CLOSE
  3. RENAME
  4. SEEK

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

* 1. OPEN
  2. **CLOSE**
  3. SEEK
  4. DELETE

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

1. OPEN
2. CLOSE
3. **CREATE**
4. RENAME

Which system call is used to change the current working directory?

* + 1. dirt()
    2. **chdir()**
    3. changedir()
    4. chmod()

# A(n) is provided to make system calls from some programming languages

1. **procedure library**
2. operator
3. pointer

D. None of the other choices

OS Windows use system call while OS Unix use system call to terminate processes normally.

1. exit; ExitProcess
2. ExitProcess; terminate
3. terminate; ExitProcess
4. **ExitProcess, exit**

13.What is the correct approach with the "No preemption condition" to prevent Deadlock?

* 1. Order resources numerically
  2. Request all resources initially
  3. Spool everything
  4. Take resources away

Which deadlock condition does "Take resources away" attack?

1. Circular-wait condition
2. Mutual exclusion
3. Hold and wait
4. **No preemption**

# What is the correct approach with the "Hold and wait condition to prevent Deadlock?

1. Order resources numerically
2. **Request all resources initially**
3. Spool everything
4. Take resources away

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

A Order resources numerically

1. Request all resources initially
2. **Spool everything**
3. Take resources away
4. Which of the following conditions that causes the processes to be terminated, when the processes executes a speed tell the OS to finish some other process?
5. Normal exit (voluntary)
6. Error exit (voluntary)
7. Fatal error (involuntary)
8. Killed by another process (involuntary)

# Which of the following conditions that causes the processes to be terminated, when process have done their work?

1. **Normal exit (voluntary)**
2. Error exit (voluntary)
3. Fatal error (involuntary)
4. Killed by another process (involuntary)

Which of the following is a method to

1. The File Manager writes the volume name and other descriptive information on an easy- to-access place on each unit:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_of the magnetic disk
2. The outermost part (**CD**)
3. **The innermost part**
4. Immediately following the master file directory
5. Stored at the beginning of the volume

15.Working set model is used for:

1. **Finding the minimum number of frames necessary for a job so that jobs can be run without "thrashing"**
2. Finding the average number of frames a job will need to run smoothly
3. Determining whether page replacement is needed
4. All of the other choices

17.Which of the following statements is incorrect about timesharing and multiprogramming systems?

1. In a timesharing system, multiple users can access the system simultaneously
2. In a multiprogramming system, one user can run ~~several processes~~ simultaneously
3. All timesharing systems are multiprogramming systems
4. **All multiprogramming systems are timesharing systems**

18.A network that is congested or has filled a large percentage of its I/O buffer space can become deadlocked if it to control the flow of messages through the network.

1. Procedures
2. Policies
3. **Protocols**
4. Rules

19.The language of the CPU is known as its

* 1. **Instruction set**
  2. Register set
  3. Control unit set
  4. None of the other choices

1. Which of the following synchronization mechanisms does not rely on busy-waiting?
   1. Lock variables
   2. Strict alternation
   3. Peterson's algorithm
   4. **Semaphores**
2. Which deadlock condition does "Ordering resources numerically" attack? A Mutual exclusion
3. Hold and wait
4. No preemption
5. **Circular-wait condition**
6. One of the primary disadvantages of contiguous storage is that
   1. It is hard to implement and manage
   2. It is difficult to find information in files
   3. **File can't be expanded unless there is empty space available immediately following it**

**D.** It is an inefficient use of space

1. 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.
2. Mutual-exclusion condition
3. **Circular-wait condition**
4. Hold and wait condition
5. No preemption condition--------------------
6. Which of the following statements about Random Access memory (RAM) is correct?
7. Is typically faster than cache memory swer)
8. **Is volatile**
9. Can only be read sequentially
10. Stores all the files on the computer
11. Assume jobs A-D arrive in quick succession in the READY queue. Using round robin scheduling (quantum=4), the turnaround time for job C is

Arrival time: 0123 Job ABCD

CPU cycle: 8 4 9 5

*C lớn nhất, dự đoán C\* ở cuối => Finish\_time C\* = 8+4+9+5=26*

*Arrival\_time C = 2*

A 7 B.20

C. 22

**D. 24 ( Finish – Arrival = 26 - 2)**

1. Which of following is true about cache in the memory hierarchy?
   1. **Small amount of fast expensive memory**
   2. Some medium-speed medium price main memory
   3. Gigabytes of slow cheap memory
   4. None of the other choices
2. Which of the following file structure is widely used on large mainframe computers?
   1. Byte sequence

B .Record sequence C .Ring

**D.Tree**

1. An example of the key differences that can exist across (and even in) types of I/O devices is:
2. Data rate
3. Data representation
4. Error conditions
5. **All of the other choices**
6. The page table for each process maintains:
   1. **The page frame location for each page of the process**
   2. The page location for each frame of the process
   3. The physical memory location of the process
   4. None of the other choices
7. What is true about preemptable resources?
   1. Will cause the process to fail if taken away
   2. **Can be taken away from a process with no ill effects**
   3. Can share among processes
   4. None of the other choices
8. devices are assigned to only one job at a time.
   1. **Dedicated**
   2. Shared
   3. Virtual
   4. Static
9. Which of the following is not a condition necessary for deadlock to exist?
   1. Mutual-exclusion condition
   2. Circular-wait condition
   3. Hold and wait condition
   4. Preemption condition
10. Which of the following is correct about the advantages of layered system?

A Easier to extend

1. Easier to debug from lower to upper layer
2. **Easier to extend and Easier to debug from lower to upper layer**
3. None of the other choices 35.An operating system
4. Manages hardware resources in a computer system
5. Manages software resources in a computer system

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

D. All of the other choices

1. Which is not a goal of a scheduling algorithm for batch systems?

A. CPU utilization B.Throughput C.Turnaround time. **D.Response time**

1. The Mach model of Page fault handling with an external pager includes
   1. A low-level MMU handler
   2. A page fault handler that is part of the kernel
   3. An external pager running in user space
   4. **All of the other choices ices**
2. 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:
3. Free block
4. MBR
5. Boot block
6. **Superblock**
7. Rearrange the layers in I/O software starting at the bottom
8. .User-level I/O software
9. .Device drivers
10. Interrupt handlers
11. Hardware
12. Device-independent OS software

A. 12345

B. 54321

**C. 43251**

D. 15234

1. Which is not true about the method of backing store: "Paging to a static swap area"?
   1. The swap area on the disk is as large as the process virtual address space
   2. Calculating the address in swap area requires knowing only where the process' paging area begins
   3. **Requires a disk map in memory**
   4. A page that is in memory always have shadow copy on disk
2. The period between interruption in the Clock of the computer is called:
   1. Clock ticks
   2. Clock time interval
   3. Clock time counter
   4. None of the other choices
3. Which approach is used in order to CPU communicate with the control registers of the I/O device?
4. Separating I/O and memory space
5. Memory-mapped I/O
6. Hybrid: separating I/O and memory space and memory-mapped I/O
7. **All of the other choices**
8. Which of the following conditions must be held to provide good solution for mutual exclusion?
9. No two processes simultaneously in critical region
10. No assumptions made about speeds or numbers of CPUs
11. No process running outside its critical region may block another process
12. **No process must wait forever to enter its critical region**
13. All of the other choices
14. 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?

Total\_byte = 200 \* 20 = 4000 bytes => total\_time = 4000bytes \* 10nsec = 40.000 nsec

1micro-sec=1u = 1000 nsec => ***40.000 / 1000 = 40u(micro-sec)***

1. 10 micro-sec
2. 20 micro-sec
3. 30 micro-sec
4. **40 micro-sec**
5. Assume the Memory Manager receives a request for a block of 200. When the best-fit algorithm is used, is the beginning address of the hole granted by the Memory Manager.

|  |  |  |
| --- | --- | --- |
| Beginning Address of |  | Hole Size |
| 4075 | 105 |  |
| 5525 | 5 |  |
| 6785 | 600 |  |
| 7560 | 20 |  |
| 7600 | 205 |  |
| 10250  **A. 7600**  B. 10250  C. 6785  D. 4075 | 4050 |  |

1. A is a group of related records that contains information to be used by specific application programs to generate reports.
2. Field
3. Record group
4. **File**
5. Directory
6. How many ways is Thread implemented?
   1. 1
   2. 2
   3. **3**
   4. None of the other choices
7. Which of the following instructions should be allowed in user mode? answer)
8. Disable all interrupts
9. **Read the time-of-day clock**
10. Set the time-of-day clock
11. Change the memory map

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

1. Set the time-of-day clock
2. All of the other choices
3. **Disable all interrupts**
4. Change the memory map
5. Which of the following is correct about Shortest Job First scheduling algorithm?
6. Avoid Starvation
7. **Minimize average waiting time**
8. Avoid Starvation and Minimize average waiting time
9. None of the other choices
10. Which of the following statements about the CPU handling interrupts is incorrect?
    1. The processor ceases to execute the current sequence of instructions
    2. The hardware saves the old PC location
    3. The CPU branches to a new instruction sequence
    4. **None of the other choices**

51.A well-known operating system for Handheld Computer is:

1. TinyOS
2. MS-DOS
3. **Symbian OS and Palm OS**
4. e-COS

52.A CPU may have two or more complete processors, so that can carry out multiple threads in the same time

A.Pipeline

1. Superscalar
2. Multicore
3. None of the other choices
4. Which method is used to prevent the communication deadlock?
5. Handling alarm answer)
6. Acknowledge signal
7. Timeouts
8. **All of the other choices**
9. Assume the following events and actions take place. The following statement\_ is true. Event action
10. P1 requests and is allocated R1.
11. P2 requests and is allocated R2.
12. P3 requests and is allocated R3.
13. P1 requests R2.
14. P2 requests R3.
15. P3 requests R1.
16. There is no deadlock
17. Event 4 caused deadlock
18. Event 5 caused deadlock.
19. **Event 6 caused deadlock**

76.Assume the following events and actions take place. The following statement is true. Event Action

1. P1 requests and is allocated R1
2. P2 requests and is allocated R2
3. P3 requests and is allocated R3
4. P1 requests R2
5. P2 requests R3
6. P3 requests R1
7. Event 5 caused deadlock.
8. There is no deadlock
9. **Event 6 caused deadlock.**
10. Event 4 caused deadlock

74.Assume the following events and actions take place. The following statement is true. Event Action

1. P1 requests and is allocated R1
2. P2 requests and is allocated R2
3. P3 requests and is allocated R3
4. P1 requests R2
5. P2 requests R3
6. P3 requests R1
7. Event 5 caused deadlock.
8. There is no deadlock
9. **Event 6 caused deadlock.**
10. Event 4 caused deadlock
11. Which of the following is not a step in the boot process?
    1. Configuration and customization settings are checked.
    2. The BIOS is activated by powering on the CPU.
    3. **The antivirus program checks all files for viruses.**
    4. The operating system is loaded into RAM.

56.A directory in UNIX/Linux consists of:

1. **I-node number and file name**
2. File name, file size, location of the file on disk
3. File name, file size, location of the file on disk, date created, owner ID
4. None of the other choices

57.Which of the following statements about device drivers is incorrect?

1. **A device driver is a set of device-specific code for controlling the I/O device attached to a computer**
2. Most operating systems expect device drivers to be part of the kernel
3. In the I/O software architecture, the device drivers layer lie right above the hardware, and below the interrupt handlers layer
4. None of the other choices

58.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)?

Choose 1 answer)

**A. 500,000 (1msec = 1.000.000 / 2 )**

B. 50,000

C. 5,000,000

D. 50,000,000

1. Which of the following process state transitions is legal?
   1. Ready-> Blocked (waiting)
   2. **Running->ready**
   3. Blocked (waiting) -> running
   4. None of the other choices
2. Which solution is used to solve the "missing block" problem for file system consistency?
   1. The file system checker rebuilds the free list
   2. **The file system checker adds the missing blocks to the free list**
   3. The file system checker allocate the free block, then copy the duplicate block in used to there
   4. None of the other choices
3. A disk queue with requests for I/O blocks on cylinders in orders: 10, 22, 20, 2, 40, 6, 38. Assume head is initially at cylinder 20. How many cylinder do Total head movement using Elevator algorithms?

**A 58**

B 60

C None of the others D 146

2 6 10 20 22 38 40=> 20-10-6-2-22-38-40=10+4+4+20+16+2= 56(downward)

2 6 10 20 22 38 40=> 20-22-38-40-10-6-2=2+16+2+30+4+4= 58(forward)

1. In modern printing systems, a disk accepts output from several users, Deadlock occurs when…..
2. The network connection for the printer overflows with too many requests to use the printer.
3. Too many users attempt to access the printer at the same time.
4. The buffer fills up with too many print jobs and the printer cannot decide which one to print.
5. **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.**
6. Which of the following interview questions is a behavioral question?
7. What does teamwork mean to you?
8. **Give me an example of a situation in which you**
9. What is your greatest weakness?
10. Do you like to work alone or with other people?

64.Disks can be divided up into one or more partitions. The first block of every partition is called:

1. Free block
2. **Boot block**
3. MBR
4. Super block

65.Which of the following is appropriate to determine program size and create page table?

1. Process execution
2. Process creation
3. Process termination time
4. Page fault time

66.In order to implement mutual exclusion on a critical resource for competing processes, only one propram at a time should be allowed:

1. To exhibit cooperation
2. None of the other choices
3. **In the critical region of the program**
4. To perform message passing

67.Which of the following statements about Electrically Erasable PROM (EEPROM) is correct?

1. Programmable
2. Volatile
3. **Can be erased and rewritten**
4. None of the other choices

67.Which conditions of mutual exclusion does the Lock Variables (Software proposal) violate?

1. **No two processes simultaneously in critical region**
2. No assumptions made about speeds or numbers of CPUs
3. No process running outside its critical region may block another process
4. No process must wait forever to enter its critical region

68.A simplest way to break a deadlock is to……

1. preempt a resource
2. **kills one of the processes**
3. locks one of the processes
4. Rollback

69. A general rule of thumb for selecting a proper time quantum in Round Robin scheduling is that it should be long enough to allow (%)percent of the CPU cycles to run to completion

A. 60

B. 100

C. 20

**D. 80**

82.When selecting catego time quantum it should be long enough to allow………percent of the CPU cycles to run to completion

A.100

1. 60
2. **80**
3. 20

70.Many computer users and some operating systems call subdirectories

1. Volumes
2. Databases
3. Files
4. **Folders**

71.Deadlock definition:

A set of processes is deadlocked if each process in the set is waiting for an event that only the set can cause. What does event mean?

1. The event is some mouse clicks
2. None of the other choices
3. **The event is release of a currently held resource**
4. The event is press some key on keyboard

74.Devices are assigned to only one job at a time.

1. Shared
2. Virtual
3. Static
4. **Dedicated**

76.Which of the following is not true about process hierarchy?

1. **A process may have more than one parent**
2. In Unix, a process and all its children and further descendants together form a process group
3. A process creates child process. The child process can itself creates more processes, forming a process hierarchy
4. Window has no concept of a process hierarchy

80.To specify an address in this segmented memory, the….. form is used

1. <physical address, offset>
2. <process, offset>
3. <virtual address, offset>
4. **<segment-number, offset>**

81. A system with 32 bit virtual address. If the page size is 16 KB and each table entry occupies 4 bytes, what is the size of the page table?

Page\_size: 16KB=214 (1KB=210 x 24 )

Number\_of\_pages = 232/214 =218 pages

Size\_of\_page table = number\_page \* size\_page\_entry = 220  bytes

1. 8 MB
2. 2 MB
3. **1 MB (=1024KB=210KB = 220Bytes)**
4. 4 MB

82.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?

A. 10K, 20K, 15K

B. 9K, 15K, 10K

C. 10K, 15K, 20K

**~~D. 20K, 15K, 10K~~**

Consider a swapping system in which memory consists of the following hole sizes in memory order: 10 MB, 4 MB, 20 MB, 18 MB. 7 MB, 9 MB, 12 MB, and 15 MB Which hole is taken for successive segment requests of (a) 12 MB (b) 10 MB (c) 9 MB for best fit?

1. 20MB 18MB 9MB
2. 18MB 10MB 9M **C 12MB 10MB 9MB** D 20MB 18MB 10MB

83.An example of a I/O block devices is:

1. CD ROM
2. All of the other choices
3. Printer
4. Modem

84.Which statement about disadvantage of Disabling interrupts, (the hardware solution to the critical region problem) is correct?

1. If process is locked in Critical Section: System Halt
2. Don't ensure Mutual Exclusion for the system with N CPUs
3. **All of the other choices**
4. Permit process to use command privileges: Danger!

86. 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. 36 sectors
2. **12 sectors**
3. 24 sectors
4. 18 sectors

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

1. Available resource vector
2. Request matrix
3. Existing resource vector
4. **Current allocation matrix**

89.The policy is based on the theory that the best page to remove is the one that has been in memory the longest

1. LRU
2. LIFO
3. NRU
4. **FIFO**

90. gives users the appearance that their programs are being completely loaded in main memory during their entire processing time.

1. Multithreading
2. **Virtual memory**
3. Segmenting
4. Shared memory

91. Which of the following is not correct about hard links and symbolic links?

1. Symbolic links can point to files in the network
2. **Hard links can point to files on other machines**
3. Hard links do not require extra disk space
4. Symbolic links need space to store the path name and considerable number of extra disk accesses
5. One of the primary disadvantages of contiguous storage is that
6. It is hard to implement and manage
7. It is difficult to find information in files
8. **File can’t be expanded unless there is empty space available immediately following it**
9. It is an inefficient use of space

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

1. **Decreasing cost per bit**
2. Decreasing capacity
3. Decreasing access time
4. None of the other choices
5. Which of the events that causes the processes to be created, when an operation system is booted?
6. **System initialization**
7. Execution of a process creation system call
8. User request to create a new process
9. Initiation of a batch job
10. Assume the Memory Manager receives a request for a block of 200. When the best-fit algorithm is used, is the beginning address of the hole granted by the Memory Manager.

|  |  |
| --- | --- |
| Beginning Address of Hole | Hole Size |
| 4075 | 105 |
| 5225 | 5 |
| 6785 | 600 |
| 7560 | 20 |

|  |  |
| --- | --- |
| 7600 | 205 |
| 10250 | 4050 |
| **A. 7600**  B. 10250  C. 6785  D. 4075 |  |

1. 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"?
2. Interrupt stealing
3. Cycle sneaking
4. **Cycle stealing**
5. All of the others.

5)How large is the block size, if the maximum partition size is 8 MB and the FAT type is FAT-12

1. 1 KB
2. **2 KB**
3. 4 KB
4. 8 KB

In FAT12 the address is 12-bit long, so there are maximum ~212 clusters (slightly less since some addresses are reserved for special purposes). For example with 2KB clusters the maximum volume size will be ~212 × ?Bytes = 8MB=23+20 bytes =>?Kb = 211

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

In FAT16 the address is 16-bit long, so there are maximum ~216 clusters (slightly less since some addresses are reserved for special purposes). For example with ?KB clusters the maximum volume size will be ~216 × ?Bytes = 128MB=27+20 bytes =>?Kb = 211/2^10=2

1. 1 KB
2. 2 KB
3. 4 KB
4. 8 KB

# How large is the block size, if the maximum partition size is 256 MB and FAT type is FAT-16

1. 1 KB
2. 2 KB
3. **4 KB**
4. 8 KB
5. Which are allocation methods of disk blocks for files?
6. Contiguous allocation
7. Linked allocation
8. Indexed allocation
9. **All of the other choices**
10. Which classes of I/O devices that Clock belong to?
11. Stream devices
12. Block devices
13. Character devices
14. **None of the other choices**
15. Which of these statements about the Inverted Page Table are true?
16. **An entry contains the pair (process, virtual page) mapped into the corresponding page frame**
17. An entry contains the pair (process, offset) mapped into the corresponding page frame
18. An entry contains the pair (segment, virtual page) mapped into the corresponding page frame
19. An entry contains the pair (segment, offset) mapped into the corresponding page frame
20. What is not a field in the process table that relates memory management?
21. Pointer to text segment info
22. Pointer to data segment info
23. Pointer to stack segment info
24. **Pointer to program segment info**
25. At which level in Protection Rings on the Pentium the Shared libraries reside
26. 0
27. **1**
28. 2
29. 3
30. The second-chance page-replacement algorithm
31. **Moves pages found at the head of a FIFO queue with the referenced bit turned on back to the tail of the queue to avoid replacing them**
32. Searches through a circular list of pages and replaces the first page it encounters that has the referenced bit turned off
33. Relies on a modified bit to determine which page to replace
34. None of the other choices
35. What is the characteristic of the fourth generation of operating system?
36. Vacuum tubes, plug boards
37. Transistors, batch systems
38. ICs and multiprogramming
39. Personal computers, single user, multitasking
40. 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:
41. Free block
42. MBR
43. Boot block
44. **Superblock**
45. Which of the following statement is a task of main memory management of OS?
46. Keep track of which parts of memory are currently being used and by whom.
47. Decide which processes to load when memory space becomes available.
48. Allocate and deallocate memory space as needed
49. **All of the other choices**
50. is the act of allowing only one process to have access to a dedicated resource.
51. **Mutual-exclusion condition**
52. Circular-wait condition
53. Hold and wait condition D No preemption condition
54. The Mach model of Page fault handling with an external pager includes
55. A low-level MMU handler
56. A page fault handler that is part of the kernel
57. An external pager running in user space
58. **All of the other choices**
59. Which of the following process state transitions is illegal?
60. Running -> Blocked (waiting)
61. Running -> ready
62. Blocked (waiting) -> ready
63. **Ready -> Blocked (waiting)**
64. Which of the following is true about the data rate for disk management?
65. The larger the block size is the faster the data rate is
66. **The larger the block size is the lower the data rate is**
67. The larger the block size is lesser the disk space is
68. None of the other choices
69. Which is an advantage of implementing threads in the kernel?
70. Is good for multiprocessor architecture
71. If one thread is blocked does not cause the other thread to be blocked
72. **Is good for multiprocessor architecture and if one thread is blocked does not cause the other thread to be blocked**
73. None of the other choices
74. Assume jobs A-D arrive in quick succession in the READY queue. Using round robin scheduling (quantum=4), the turnaround time for job D is

Arrival time: 0 1 2 3 Job: A B C D

CPU cycle: 8 4 9 5

1. 7
2. 20
3. 22
4. 24
5. allocation allows files to use any storage space available on the disk.
6. Contiguous storage
7. **Noncontiguous storage**
8. Fragmented storage
9. Add-on storage
10. What is a “stripping” in RAID?
11. **Distributing data over multiple drives**
12. Take away possessions from someone
13. Get undressed
14. All of the other choices
15. A disk queue with requests for I/O blocks on cylinders in orders: 10, 22, 20, 2, 40, 6, 38. Assume that the disk head is initially at cylinder 20. How many cylinder do Total head movement using FCFS?

A. 146

1. 60
2. 58
3. None of the others
4. Which of the following statements about X window is correct?
5. Is high portable for nearly all UNIX and LINUX system
6. Is highly event driven. Event flows from the workstation to the program
7. A key concept in X window is the resource. A resource is a data structure that holds certain information created on the workstation, to be shared among multiple processes.
8. **All of the other choices**
9. What is the main characteristic of real-time operating system?
10. Multiple CPU
11. Time-sharing
12. **Time is key parameter**
13. Many I/O devices
14. A simplest way to break a deadlock is to
15. preempt a resource
16. Rollback
17. **kills one of the processes**
18. locks one of the processes
19. When an external device becomes ready to be serviced by the processor, the device sends this signal to the processor. This signal is called:
20. **Interrupt signal**
21. Halt signal
22. Handler signal
23. None of the other choices
24. A network that is congested or has filled a large percentage of its I/O buffer space can become deadlocked if it does not have to control the flow of messages through the network
25. Procedures
26. Policies
27. **Protocols**
28. Rules
29. Which of these statements about the algorithm "Worst fit’ is true?
30. Memory Manager scans along the list of segments until it finds a hole that is big enough.
31. Memory Manager starting searching the list of segments from the place where it left off last time
32. Memory Manager searches the entire list of segments from beginning to end and take smallest hole that is adequate.
33. **None of the other choices**
34. The absolute pathname of a file in Linux is with respect to the
35. Home directory
36. Login directory
37. **Root directory on the system**
38. All of the other choices
39. 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?
40. **2^20 pages**
41. 2^21 pages
42. 2^22 pages
43. 2^23 pages
44. For matrix-based algorithm to detect deadlock, number of instances of each resource each process needs is given by
45. Existing resource vector
46. Available resource vector
47. **Current allocation matrix**
48. Request matrix
49. 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.
50. 17 minutes
51. 18 minutes
52. 18.8 minutes
53. 12,8 minutes
54. In a directed graph used to model deadlock, resources are represented using
55. **Squares.**
56. Circular
57. Ellipse
58. Rectangle
59. 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. **The event is release of a currently held resource**
2. The event is press some key on keyboard
3. The event is some mouse click
4. None of the other choices
5. A table in main memory storing linked list of allocation of disk blocks is called:
6. Disk allocation table
7. **Linked list table**
8. File list table
9. File allocation table
10. Which of the following information bits in the entry of page table is false?
11. Present/absent bit
12. **Mode bit**
13. Protection bit
14. Modified bit
15. Of the three components of access time in a disk, is the longest.
16. **Seek time**
17. Search time
18. Transfer time
19. Delay time
20. Which of the following is not a CPU scheduling criterion?
21. CPU utilization
22. **Burst time**
23. Throughput
24. Response time
25. The is the essential component of the operating system that remains in RAM when your

computer is powered on.

1. **kernel**
2. core
3. system file
4. Registry
5. The following requirement must be met by any facility or capability that is to provide support for mutual exclusion:
6. Only one process at a time can be allowed into a critical section
7. A process remains in its critical region for a finite time only
8. No assumption can be made about relative process speeds
9. **All of the other choices**
10. 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 20 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)?
11. 4msec, 40 msec, 20 sec
12. 2 msec, 20 msec, 10 sec
13. 1 msec, 10 msec, 10 sec
14. **2msec, 20 msec, 40 sec**
15. 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 10msec 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. 5,000.495 nsec

**C. 5,001.445 nsec**

D. 5,000.95 nsec.

15. Average access time =  
0.95 x 1 nsec (word is in the cache) + 0.05 x 0.99 x 10 nsec (word is in RAM, but not in the cache) + 0.05 x0.01 x10,000,000 nsec (word on disk only) = 5001.445 nsec = 5.001445 sec

1. A disk queue with requests for I/O blocks on cylinders in orders: 10, 22, 20, 2, 40, 6, 38. Assume that the disk head is initially at cylinder 37. Which the ordering cylinder in progress do using an elevator algorithms?

A. 37 38 40 2 6 10 20 22

**B. 37 38 40 22 20 10 6 2**

C. 37 10 22 20 2 40 6 38

D. 37 38 40 2 20 10 6 22

1. What is true about non-preemptable resources?
2. **Will cause the process to fail if taken away**
3. Can be taken away from a process with no ill effects
4. Can share among processes
5. None of the other choices

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# The actua1.l location in main memory is called a(n):

1. Relative address
2. Logical address
3. **Absolute address**
4. None of the other choices

# The first-come, first-served (FCFS) algorithm is fine for most, systems

1. Interactive
2. **Batch**
3. Real time
4. Multiuser

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

1. VO device
2. Programmed VO
3. **DMA**
4. None of the other choices

# Which of the following operating system has no concept of a process hierarchy?

1. **Win32**
2. Linux
3. Unix
4. None of the other choices

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

1. CPU utilization
2. Throughput
3. Turnaround time
4. **Response time**

# Which is a method of interprocess communication that use two primitive send and receive?

1. Lock variables
2. **Message passing**
3. Peterson's algorithm
4. Semaphores

# A disk queue with requests for I/O blocks on cylinders in orders: 10,22, 20, 2, 40, 6, 38. Assume that the disk head is initially at cylinder 20. How many cylinder do Total head movement using SSF?

A. 146

1. 60
2. 58
3. None of the others

# If there are 64 pages and the page size is 2048 words, what is the length of logical address?

1. 14 bits
2. 15 bits
3. 16 bits
4. **17 bits 2^6\*2^11**

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

1. Instruction Register (IR)
2. Program Counter (PC)
3. **Program Status Word (PSW)**
4. None of the other choices

# 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. Lagging
2. Bumping
3. **Aging**
4. Accelerated priority

# What is the main characteristic of Sensor Node operating system?

**A is usually event driven, responding to external event**

B.Time-sharing

C. Time is key parameter

D. Many VO devices

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

1. The larger the block size is the lower the data rate is
2. **The larger the block size is the worse the disk space utilization is**
3. The larger the block size is lesser the disk space is
4. None of the other choices

# 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?

**A. 123**

B. 1234

C. 12345

D. 123456

# Of the three components of access time in a disk, is the longest

1. **Seek time**
2. Search time
3. Transfer time
4. Delay time

# What is the way to recover from a deadlock:

1. Preempt a resource
2. Rollback
3. Killing processes
4. **All of the other choices**

# Assume the following events and actions take place. The following statement, is true.Even action

**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.**

1. **There is no deadlock**
2. Event 4 caused deadlock
3. Event 5 caused deadlock
4. Event 6 caused deadlock

# Which of following is true about cache in the memory hierarchy?

1. **Small amount of fast expensive memory**
2. Some medium-speed medium price
3. Gigabytes of slow cheap memory
4. None of the other choices

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

1. 20
2. 60
3. **80**

D. 100

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

1. **Linked List Allocation**
2. Contiguous Allocation
3. File Allocation Table
4. i-node

# Which of the following statement is correct about a disadvantage of memory- mapped VO?

1. **Since the control registers of devices are mapped into the memory space, device drivers**
2. Programs can use 1 instructions to test whether the device is ready
3. Caching a device control register would be disastrous
4. None of the other choices.

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

**A** Mutual-exclusion condition

1. Circular-wait condition
2. Hold and wait condition
3. Preemption condition

# 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.

1. 17 minutes
2. 18 minutes
3. 18.8 minutes
4. 12,8 minutes

# keep track of memory usages?

1. Memory Management with Bit Maps
2. Memory Management with Linked Lists
3. **Both Memory Management with Bit Maps and Memory Management with Linked Lists**
4. None of the other choices

# Which of the following statements is not a task of file management of OS?

1. Create, manipulate and delete File/Directory
2. Mapping files onto secondary storage
3. File backup on stable (nonvolatile) storage media.
4. **Allocate and deallocate memory space as needed**

# A well-known operating system for sensor node is

1. **TinyOS**
2. MS-DOS
3. Personal Operating System
4. e-Cos

# Assume jobs A-D arrive in quick succession in the READY queue. Using round robin scheduling with time slice equaling 4, the average turnaround time for each job is

**Arrival time: 0 1 2 3 Job: A B C D**

**CPU cycle: 8 4 9 5**

**A. 18.25**

1. 73
2. 20
3. 5

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

1. There is no reliability support in RAID level 0
2. **All RAID levels can survive one disk crash**
3. In RAID level 2, a single bit error in a word can be detected AND corrected
4. In RAID levels 3, 4, 5 a single bit error in a word can be detected

# .Consider the following state of a system with four processes, P1, P2, P3 and P4, and five typ RS1, RS2, RS3, RS4 and RS5

**ProcessAllocated Matrix Request Matrix**

|  |  |  |  |
| --- | --- | --- | --- |
| **P1** | **01112** | **11021** | **E = (24144)** |
| **P2** | **01010** | **01021** | **A = (01021)** |
| **P3** | **00001** | **02031** |  |
| **P4** | **21000** | **02110** |  |

**Deadlocked processes are:**

1. P1, P2
2. P1, P3
3. P2, P3
4. **P1, P4**

# Assume the Memory Manager receives a request for a block of 200. When the first-fit algorit is used, is the beginning address of the block granted by the Memory Manager.

|  |  |
| --- | --- |
| **Beginning Address** | **Memory Block Size** |
| **4075** | **105** |
| **5225** | **5** |
| **6785** | **600** |
| **7560** | **20** |
| **7600** | **205** |

**10250 4050**

**A. 7600**

B. 10250

C. 6785

D. 4075

# VMware Workstation is:

1. Type 1 Hypervisor
2. **Type 2 Hypervisor**
3. Host Operating system
4. Guest Operating system

# How many level of scheduling are used in computer

1. 1
2. 2

**C. 3** D. 4

# The Joliet Extensions provide

1. Long file name supported Unicode character
2. Directory nesting deeper than 8 levels
3. Directory names with extensions
4. **All of the other choices**

# Which of these statements about the algorithm "First fit" is true?

1. **Memory Manager scans along the list of segments until it finds a hole that is big enough.**
2. Memory Manager starting searching the list of segments from the place where it left off last time.
3. Memory Manager searches the entire list of segments from beginning to end and take smallest hole that is adequate.
4. None of the other choices

# Which is special file?

A character special file

1. block special fle
2. **Both character special file and block special file**
3. None of the other choices

# File Structure can be

1. Byte sequence
2. Record sequence
3. Tree
4. **All of the other choices**

# are special files with listings of filenames and their attributes.

A Databases

1. **Directories**
2. Programs
3. Data files

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

A Contiguous block allocation

1. **Linked list block allocation**
2. Sparse block allocation
3. Indexed block allocation

# What is not a main function of an operating system?

1. Provide the users with an extended (virtual) machine
2. Manage the I/O devices
3. **Provide user interfaces**
4. Support virtual memory

# The page table for each process maintains:

1. **The page frame location for each page of the process**
2. The page location for each frame of the process
3. The physical memory location of the process
4. None of the other choices

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

1. The network connection for the printer overflows with too many requests to use the printer.
2. Too many users attempt to access the printer at the same time.
3. The buffer fills up with too many print jobs and the printer cannot decide which one to print.
4. **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.**

**TEST 5**

1. **(Choose 1 answer) Shell script is**
2. A directory containing a list of system files
3. A file containing a list of system calls
4. **A file containing a list of shell commands are executed in order**
5. A directory containing a list of shell commands

# (Choose 1 answer)

**With respect to IO software, the characteristic of device independence is a result of:**

1. **A set of individual library functions for controlling each IO device was developed individually by manufacture.**
2. Each IO device has individual controlling mechanism and they are pre-implemented in operating system.
3. An individual driver of the IO device was developed by device manufacture.
4. An interface in operating system was declared and it is implemented in specific IO driver.

# (Choose 1 answer)

**With respect A input-output management, memory-mapped IO is used**

* 1. When IO devices transfer data to memory.
  2. When IO devices are attached to system using individual buses.
  3. **When memory and IO devices are connected to system using common buses.**
  4. When memory transfers data to an IO device.

# (Choose 1 answer)

**What is the purpose of CPU scheduling algorithms?**

* 1. Put to sleep and wake up processes in an efficient manner
  2. Allocate memory to the processes in a fair and efficient way
  3. **Pick one of the ready processes to run next**
  4. None of the others

# (Choose 1 answer)

**The entry of all the PCBs of the current processes is in**

* 1. Process register
  2. **Process table**
  3. Process unit
  4. Program counter

# (Choose 1 answer)

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

* 1. MBR
  2. **Boot block**
  3. Super block
  4. Free block

# (Choose 1 answer)

**The mounted file system is**

* 1. creating of a file system
  2. removing portion of the file system into a directory structure
  3. deleting a file system
  4. **attaching portion of the file system into a directory structure**

# (Choose 1 answer)

**Which are allocation methods of disk blocks for files?**

* 1. Contiguous allocation
  2. **All of the others**
  3. Indexed allocation
  4. Linked allocation

# (Choose 1 answer)

**Consider the virtual page reference string 1->2->3->2->4->1->3->2->4->1 On a demand paged virtual memory system running on a computer system that main memory size of 3 pages frames which are initially empty. Let LRU, FIFO and OPTIMAL denote the number of page faults under the corresponding page replacements policy. Then:**

* 1. **OPTIMAL < FIFO < LRU**
  2. OPTIMAL = LRU
  3. OPTIMAL < LRU < FIFO
  4. OPTIMAL = FIFO

# (Choose 1 answer)

**When is the process transit the state from Running to Block**?

1. **The process is selected by the scheduler**
2. The process is suspended by the scheduler
3. The process waits for some events to occur
4. The awaited event of process occurs

# (Choose 1 answer)

**PCB (Process Control Block) does NOT contain**

1. Open files list
2. Program counter
3. Memory limits
4. **Bootstrap**

# (Choose 1 answer)

**If Optimal page replacement is used with four page-frames. How many page faults will occur with the reference string 1->7->2->3->2->7->1->0->7->1->3 if the four frames are initially empty?**

There are four-page frames are given and an Optimal page replacement policy is used.

The given page size= 4,

The given page reference string is =  

**1-> 7-> 2-> 3-> 2-> 7-> 1-> 0-> 7-> 1 ->3**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Page**  **frames**  **size=**  **4** | **1** | **1** | **1** | **1** | **1** | **1** | **1** | **1** | **1** | **1** | **1** |
|  | **7** | **7** | **7** | **7** | **7** | **7** | **7** | **7** | **7** | **7** |
|  |  | **2** | **2** | **2** | **2** | **2** | **0** | **0** | **0** | **0** |
|  |  |  | **3** | **3** | **3** | **3** | **3** | **3** | **3** | **3** |
| **Page fault** | **F** | **F** | **F** | **F** | **H** | **H** | **H** | **F** | **H** | **H** | **H** |

A.6

1. 5
2. 7
3. 8

# (Choose 1 answer)

**In the Transition States. processes that are in Running state can transit to:**

1. **Blocked, Ready, Terminated**
2. New, Ready, Blocked, Terminated
3. Blocked, Terminated
4. New, Ready, Blocked

# (Choose 1 answer)

**Which paging replacement algorithm is only used in benchmark?**

1. FIFO
2. Aging
3. **Optimal**
4. WSClock

# (Choose 1 answer)

**Assume the Memory Manager receives a request for a block of 200. When the first-fit algorithm is used. is the beginning address of the block granted by the Memory Manager.**

**(Beginning Address: Memory Block Size) (4075: 105)**

**(5225: 5)**

**(6785: 600)**

**(7560: 20)**

**(7600: 205)**

**(10250: 4050)**

**(15125: 230)**

**(24500: 1000)**

A. 15125

B. 10250

**C. 7600**

D. 6785

# (Choose 1 answer)

**Which one is a key concept in the design of I/O software for OS?**

1. **It should be device independent**
2. It should be device dependent
3. It should support special devices in advance
4. It should interact with the device drivers and makes hardware alive

# (Choose 1 answer)

**Which of the following parameters are used for evaluating a CPU scheduling algorithm?**

1. Average CPU utilization; Average response time
2. **Average waiting time; Average turnaround time**
3. CPU utilization; Response time
4. Waiting time; Turnaround time

# (Choose 1 answer)

**The main classes of I/O devices are:**

1. Block devices
2. **Block devices and Character devices**
3. Character devices
4. Stream devices

# (Choose 1 answer)

**Which is a Real time operating system?**

1. **RTLinux**
2. Windows NT
3. Windows Server Enterprise
4. Kali Linux

# (Choose 1 answer)

**With respect to methods to solve deadlocks. (choose the best option)**

1. **Preemptable resources can be resolved deadlocks by reallocating resources from one process to another.**
2. Only one process is allowed to access network interface card at a time.
3. Only one process is allowed to use CPU at a time.
4. Only one process is allowed to access a file at a time.

# (Choose 1 answer)

**Page fault occurs when**

1. a page is corrupted
2. a requested page is in CPU
3. an exception is thrown
4. **a requested page is not in memory**

# (Choose 1 answer)

**Which process state means a process is waiting for execute?**

1. Execute
2. Complete
3. Terminate
4. **Ready**

# (Choose 1 answer)

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

1. **Hard link**
2. Both hard link and symbolic link
3. Soft link
4. Symbolic link

# (Choose 1 answer)

**The result of command "Is -lid ./" is:**

**"3419898 -rwxrwxr-x 2 sdev sdev 4096 May 4 22:21 ./"**

What is the number "4096"?

1. The i-node of the current directory
2. **The size in bytes of the current file**
3. The i-node of the current file
4. The size in bytes of the current directory

# (Choose 1 answer)

**As one of the virtual memories, physical address space is divided into fixed-length areas. What is such a fixed-length area called?**

1. Sector
2. Frame
3. **Page**
4. Segment

# (Choose 1 answer)

**Choose common characteristic in both two approaches for managing file content blocks: Linked list allocation and i-node.**

1. File content blocks need NOT to be contiguous.
2. Search operation has higher performance
3. File content blocks must be contiguous.
4. **Each block contains a reference to next block.**

# (Choose 1 answer)

**Which of following events will change the state of an active process from Running to Ready?**

1. De-allocating all resources
2. The process is chosen by scheduler
3. **Time-out (time slice expired)**
4. IO wait

# (Choose 1 answer)

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

1. **Process Management**
2. Space Management
3. Speed Management
4. Time Management

# (Choose 1 answer)

**Which of the following is a method to keep track of memory usages?**

1. Memory Management with Bit Maps
2. Memory Management with Linked Lists
3. **Both Memory Management with Bit Maps and Memory Management with Linked Lists**
4. Memory Management with Graphs

# (Choose 1 answer)

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

1. Processor. Registers, I/O Modules, Main Memory
2. None of the others
3. Processor, Registers, Main Memory. System Bus
4. **Processor, Main Memory. I/O Modules, System Bus**

# (Choose 1 answer)

**Which statement is incorrect about system calls?**

1. User programs use system calls to invoke operating system services
2. A system call allows a user process to assess and execute operating system functions inside the kernel.
3. Every system call involves overhead due to context switch
4. **In terms of performance, using system calls is better than using procedure calls**

# (Choose 1 answer)

**A disk queue with requests for I/O blocks on cylinders in orders: 98, 183, 37, 122, 14, 124, 65, 67. Assume that the disk head is initially at cylinder 50 and the head move upward. How many cylinders does Total head movement move when the Elevator algorithms are used?**

**14 37 50 65 67 98 122 124 183**

**15 2 31 24 2 59**

**146 23**

A. 653

B. 205

C. 229

D. 302

# (Choose 1 answer)

**There are 4 page-frames available in real memory, and a process makes the list of page references as follows: 2->3->6->4->6->3->1->2->4->6. How many page faults occur during execution of this process using the LRU page replacement algorithm? Here, all page frames are empty at the beginning of the process.**

Concept:

Least Recently Used page replacement:

The Least Recently Used page replacement method tracks page consumption over a short time period. It operates on the premise that the pages that have been widely utilized in the past are likely to be heavily used in the future as well.

Explanation:

There are four-page frames are given and an LRU page replacement policy is used.

The given page size= 4,

The given page reference string is =  

**2-> 3-> 6-> 4-> 6-> 3-> 1-> 2-> 4-> 6**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Page**  **frames**  **size=**  **4** | **2** | **2** | **2** | **2** | **2** | **2** | **1** | **1** | **1** | **1** |
|  | **3** | **3** | **3** | **3** | **3** | **3** | **3** | **3** | **6** |
|  |  | **6** | **6** | **6** | **6** | **6** | **6** | **4** | **4** |
|  |  |  | **4** | **4** | **4** | **4** | **2** | **2** | **2** |
| **Page fault** | **F** | **F** | **F** | **F** | **H** | **H** | **F** | **F** | **F** | **F** |

1. 8
2. 4
3. 6
4. 2

The given page reference string is =  7, 2, 7, 3, 2, 5, 3, 4, 6, 7, 7, 1, 5, 6, 1

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Page**  **frames**  **size=**  **4** | **7** | **7** | **7** | **7** | **7** | **7** | **7** | **4** | **4** | **4** | **4** | **4** | **5** | **5** | **5** |
|  | **2** | **2** | **2** | **2** | **2** | **2** | **2** | **6** | **6** | **6** | **6** | **6** | **6** | **6** |
|  |  |  | **3** | **3** | **3** | **3** | **3** | **3** | **3** | **3** | **1** | **1** | **1** | **1** |
|  |  |  |  |  | **5** | **5** | **5** | **5** | **7** | **7** | **7** | **7** | **7** | **7** |
| **Page fault** | **F** | **F** | **H** | **F** | **H** | **F** | **H** | **F** | **F** | **F** | **H** | **F** | **F** | **H** | **H** |

**Number of Page faults = 9**

**Number of Page hits = 6**

**Number of memory access = 15**

**Page fault rate = Number of page faults / Number of memory access**

**Page fault rate = 9/15**

**Page fault rate = 0.6**

**Hence the correct answer is 0.6.**

# (Choose 1 answer)

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

1. Response time
2. CPU utilization
3. **Arrival Time**
4. Throughput

# (Choose 1 answer)

**Which of the following is invalid deadlock prevention scheme?**

1. **Never request a resource after releasing any resource**
2. Release all resources before requesting a new resource
3. Request and all required resources be allocated before execution
4. Number the resources uniquely and never request a lower numbered resource than the last one requested.

# (Choose 1 answer)

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

1. Interrupt-driven I/O
2. Isolated I/O
3. Direct Memory Access (DMA)
4. **Programmed I/O**

# (Choose 1 answer)

**A computer has 8GB of memory, with OS taking 4GB and each user program also taking up 512MB with an 85% average I/O wait. CPU utilization of this computer is:**

**8-4 = 4\*1024/512=8=> 1-0.85^8=**

**A. 97%**

B. 99%

C. 72.75%

D. 97.53%

# (Choose 1 answer)

**Parallel processing is also called .**

1. shared processing
2. divided processing
3. **multiprocessing**
4. uniprocessing

# (Choose 1 answer)

**A critical section is a program segment**

1. **where shared resources are accessed**
2. which avoids deadlocks
3. which should run in a certain specified amount of time
4. which must be enclosed by a pair of semaphore operations. P and V

# (Choose 1 answer)

**Assume the following events and actions take place. Which of the following statement is true?**

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.**
7. Event 6 caused deadlock.
8. Event 4 caused deadlock.
9. **There is no deadlock.**
10. Event 5 caused deadlock.

# (Choose 1 answer)

**LRU replaces the page that has spent the .**

1. shortest time in memory without being referenced
2. shortest time in memory
3. longest time in memory
4. **longest time in memory without being referenced**

# (Choose 1 answer)

# (Choose 1 answer)

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

1. <process, offset>
2. **<segment-number, offset>**
3. <virtual address, offset>
4. <physical address, offset>
5. What is not the way to recover from a deadlock:
   1. Preempt a resource

C. Killing processes

B. Rollback

**D. Locks one of the processes**

1. Which of special register contains the condition code bits, the CPU priority, the mode bit and bits?
   1. **Program Status Word (PSW)**
   2. Instruction Register (IR)
   3. None of the other choices
   4. Program Counter (PC)
2. The task of subdividing memory between the OS and processes is performed automatically called:
   1. Protection
   2. Relocation
   3. All of the other choices
   4. **Memory Management**
3. Five batch jobs A through E, arrive at a computer center at almost the same time. They have running times of 8, 6, 2, 10, and 4 minutes. Determine the average turnaround time for FCF Ignore process switching overhead
   1. 20 minutes
   2. 18.8 minutes
   3. 18 minutes
   4. 17 minutes
4. The methods determine where page is on the disk when it is paged out is
   1. None of the other choices
   2. **Both Paging to a static swap area and Backing up pages dynamically**
   3. Backing up pages dynamically
   4. Paging to a static swap area
5. 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. **The event is release of a currently held resource**
  2. The event is press some key on keyboard
  3. None of the other choices
  4. The event is some mouse click

1. Which of the following is not special file?
   1. Character special file
   2. None of the other choices
   3. **Stream special file**
   4. Block special file
2. An arrival message causes the system to create a new thread to handle this message. This new thread is call
   1. Distributed
   2. Upcall
   3. Activator
   4. **Pop-up**
3. Which solutions are used to solve the shared libraries?
4. Relocation on the fly and position-independent code
5. Static reallocation and position-independent code
6. None of the other choices
7. **Position-independent code**
8. Assume the following events and actions take place. The following statement, is true, Event Action.
9. P1 requests and is allocated the printer R1.
10. P1 releases the printer R1.
11. P2 requests and is allocated the disk drive R2.
12. P2 releases the disk R2.
13. P3 requests and is allocated the plotter R3.
14. P3 releases the plotter R3.
    1. Event 4 caused deadlock
    2. Event 5 caused deadlock.
    3. **There is no deadlock**
    4. Event 6 caused deadlock.
15. The is the essential component of the operating system that remains in RAM when your computer is powered on
16. registry
17. system file
18. **kernel**
19. core
20. Which of the following operating system has no concept of a process hierarchy?
21. Unix
22. Linux
23. **Win32**
24. None of the other choices
25. In modern printing systems, a disk accepts output from several users, Deadlock occurs when .
26. Too many users attempt to access the printer at the same time.
27. The network connection for the printer overflows with too many requests to use the printer.
28. The buffer fills up with too many print jobs and the printer cannot decide which one to print.
29. **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.**
30. What is a "stripping" in RAID?
31. Take away possessions from someone
32. All of the other choices
33. **Distributing data over multiple drives**
34. Get undressed
35. Which of the following process state transitions is correct, when the scheduler picks a process from the ready queue to run?
36. Running → Blocked (waiting)
37. **Ready -> running**
38. Running ready
39. Blocked (waiting) -> ready
40. Consider the following state of a system with four processes, P1, P2, P3 and P4, and five types of resources RS1, RS2, RS3, RS4 and RS5.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Process |  | Allocated Matrix |  | Request Matrix |
| P1 | 01112 | 11021 | E = (24144) |  |
| P2 | 21000 | 02110 | A = (01021) |  |
| P3 | 00001 | 02031 |  |  |
| P4 | 01010 | 01021 |  |  |

Deadlocked processes are :

* 1. P1, P2
  2. P1, P3
  3. **P1, P4**
  4. P2, P3

1. Which of these statements about the algorithm "Worst fit" is true?
2. Memory Manager scans along the list of segments until it finds a hole that is big enough.
3. **None of the other choices**
4. Memory Manager searches the entire list of segments from beginning to end and take smallest hole that is adequate.
5. Memory Manager starting searching the list of segments from the place where it left off last time.
6. What is the main characteristic of real-time operating system? A Many I/O devices
7. Multiple CPU
8. Time-sharing
9. **Time is key parameter**
10. Assume jobs A-D arrive at almost the same time in the READY queue. Determine the average turnaround time for Round Robin scheduling (quantum-2). Ignore process switching overhead

Job: A B C D A C D A C

2 2 2 2 2 2 2 1 2

A = 15 B= 4 C=17 D=14

CPU cycle: 5 2 6 4

A. 9.0

B. 12.5

C. 5.5

D. 10.5

1. The first-come, first-served (FCFS) algorithm is fine for most systems.
2. Real time
3. Interactive
4. **Batch**
5. Multiuser
6. If there are 64 pages and the page size is 2048 words, what is the length of logical address?
7. 16 bits
8. 15 bits
9. **17 bits**
10. 14 bits
11. How many level of scheduling are used in computer
12. 1
13. 4
14. **3**
15. 2
16. When a virtual memory system manages memory in fixed length units, which of the following terms correctly represents its unit?
17. **Page**
18. Frame
19. Block
20. Segment
21. Which of the following statements is not correct about the device controller of I/O devices?
22. Is electronic component of device
23. Can handle two, four, or even eight identical devic
24. Is also called adapter
25. **Is software component of device**
26. Where is the position of the operating system in computer system:
27. Above the hardware and under the user interface program
28. None of the other choices
29. Between the user interface program and the application Program
30. In user space
31. 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. 22
  2. 24
  3. 20
  4. 7

1. Which of the following statements is incorrect about Translation Look-aside Buffer (TLB)?
2. None of the other choices
3. A TLB miss implies a disk operation will follow
4. Each entry of a TLB contains the information about one page. including the virtual page number and the corresponding page frame
5. A TLB is sometimes known as an associative memory
6. Increasing file system performance is implemented by .
7. Buffer cache
8. **All of the other choices**
9. Block Read Ahead
10. Defragmenting Disks
11. 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.

6 4 8 2 10

6 10 18 20 30 = 84/5

1. 10.8 minutes
2. 16.8 minutes
3. 54 minutes
4. 12,8 minutes
5. Which is space efficiency, if 4KB-file using file system with 8KB-block? **A. 50%**

B. 75%

C. 25%

D. 100%

1. Which is not a goal of a scheduling algorithm for batch systems?
2. Throughput
3. **Response time**
4. CPU utilization
5. Turnaround time
6. Which of the following is not a well-known technique for organizing the physical storage blocks for a file?

A Sparse block allocation

1. Indexed block allocation
2. **Linked list block allocation**
3. Contiguous block allocation
4. The aspect of disk performance that represents the time it takes to position the head a the desired track is known as
5. None of the other choices
6. Rotational delay
7. Access time
8. **Seek time**
9. A is a portion of a process that can run independently. A subprocess
10. program
11. Mini-process
12. **thread**
13. Which of following statements about the memory hierarchy is false?
14. Some medium-speed medium price main memory
15. Small amount of fast expensive memory - cache
16. Gigabytes of slow cheap disk storage
17. **None of the other choices**
18. Suppose a virtual address space of 2^32 words and the page size is 2^12 words. If the virtual address is 12345678 in Hexadecimal, what would be the page number in Hexadecimal?

It is given that virtual address is 32 bit long.

Hence, there are 2^32 addresses in the virtual address space.

Page Size is given to be 4 KB ( there are 4K (4 \* (2 ^ 10) )addresses in a page), so the number of pages will be ( 2^32 ) / ( 2 ^ 12 ) = 2 ^ **20.**

To address each page 20 bits are required.

The most significant 20 bits in the virtual address will denote the page number being referred and the remaining 32-20=**12 bits** **will be the page offset.**

One thing to remember is page size (in the virtual address space ) is always same as the frame size in the main memory. Hence the last 12 bits will remain same in the physical address as that of the virtual address.

To get the frame address in the main memory just use the **first 20 bits**.

Example: Consider the virtual address 0x12345678

Here 1234 in **12345**678 denotes the page number .

**A. 12345**

B. 1234

C. 123

D. 123456

1. Which method is used to implement files to keep each file as a linked list of disk blocks?
2. i-node
3. Contiguous Allocation
4. File Allocation Table
5. **Linked List Allocation**
6. Which of the following statement is not true about separating I/O and memory space?
7. **Caching a device control register would be disastrous**
8. Device drivers must be written using assembly language
9. Programs must use 2 instructions to test whether the device is ready
10. There is special protection mechanism to keep user processes from performing I/O
11. When selecting the proper time quantum it should be long enough to allow percent of the CPU cycles to run to completion

A. 100

1. **80**
2. 60
3. 20
4. Which of the following is specified to indicate the directory where the file is located?
5. Sub-directory
6. **Path name**
7. Root directory
8. Extension
9. A disk queue with requests for I/O blocks on cylinders in orders: 10, 22, 20, 2, 40, 6, 38. Assume that the disk head is initially at cylinder 20. How many cylinder do Total head movement using FCFS?

A. 146

1. 60
2. None of the others
3. **58**
4. An arrival message causes the system to create a new thread to handle this message. This new thread is call .

A Activator

1. **Pop-up**
2. Upcall
3. Distributed
4. The methods determine where page is on the disk when it is paged out is
5. Paging to a static swap area
6. Backing up pages dynamically
7. Both Paging to a static swap area and Backing up pages dynamically
8. None of the other choices
9. Consider the following state of a system with four processes, P1, P2, P3 and P4, and five types of resources RS1, RS2, RS3, RS4 and RS5.

|  |  |  |  |
| --- | --- | --- | --- |
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| P2 | 21000 | 02110 | A = (01021) |
| P3 | 00001 | 02031 |  |
| P4 | 01010 | 01021 |  |

Deadlocked processes are:

* 1. P1, P3
  2. P2, P3
  3. **P1, P4**
  4. P1, P2

Test

Q1: The I/O technique where the processor busy waits for an I/O operation to complete is called:

1. **Programmed I/O**
2. Interrupt-driven I/O
3. Direct Memory Access (DMA)
4. None of the other choices

Q2: Which of the following is true about the data rate for disk management?

1. The larger the block size is the faster the data rate is
2. **The larger the block size is the lower the data rate is**
3. The larger the block size is lesser the disk space is
4. None of the other choices

Q3: A well-known Embedded operating system is:

1. TinyOS
2. **QNX and VxWork**
3. Symbian OS and Palm OS
4. e-COS

Q4: 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. 10,8 minutes
2. 12,8 minutes
3. 16,8 minutes
4. 54 minutes

Q6: What is incorrect about contiguous allocation of files?

1. It is simple to implement
2. It leads to excellent read performance
3. **It does not cause disk fragmentation**
4. It is widely used on CD-ROMs

Q8: Which of the following statements about interrupts and trap instructions is incorrect?

1. An interrupt is a hardware-generated change of control flow within the system
2. An interrupt handler deals with the cause of the interrupt
3. A trap instruction is a software-generated interrupt
4. **None of the other choices**

Q10: Which are the tasks of clock driver for the clock software in the computer.

1. Maintaining the time of day
2. Accounting CPU usage
3. Handling the alarm system call made by user processes
4. **All of the other choices**

Q11: Which of the following is an Operating System component?

1. **Process Management**
2. Time Management
3. Space Management
4. Speed Management

Q12: When making CDs for sale, such as music or software CDs, data is recorded on a master disc by

means of a high-intensity laser beam, which burns indentations, called pits, and flat areas, called:

1. **Lands**
2. Valleys
3. Hills
4. Lakes

Q13: Which is the maximum number of partition that most disks can be divided up?

1. 2
2. 3
3. **4**
4. 5

Q14: For matrix-based algorithm to detect deadlock, number of instances of each resource each process needs is given by

1. **Current allocation matrix**
2. Request matrix
3. Existing resource vector
4. Available resource vector

Q15: Where should be put the page replacement algorithm In Mach model of Page fault handling with an external pager?

1. In the low-level MMU handler
2. In the page fault handler that is part of the kernel
3. In the external pager running in user space
4. **All of the other choices**

Q18: Which class of I/O devices that Scanner belongs to?

1. Stream devices
2. Block devices
3. **Character devices**
4. None of the other choices

Q20: Which is the fastest bus in the IBM PC computer?

1. **ISA (Industry Standard Architecture)**
2. PCI (Peripheral Component Interconnect)
3. USB (Universal Serial BUS)
4. IDE (Integrated Drive Electronic)

Q21: Which of the following operating systems is an example of monolithic system?

1. UNIX
2. Windows XP
3. Mac OS
4. **MS-DOS**

Q22: Information that must be saved prior to the processor transferring control to the interrupt handler routine includes:

1. PSW
2. None of the other choices
3. PSW and Contents of processor registers
4. **PSW and PC**

Q23: Which of the following is correct about symbolic links?

1. Symbolic links need not space to store the path name
2. Symbolic links can only point to files on the same machines
3. **Symbolic links can point to files in the network**
4. None of the other choices

Q25: What is true about preemptable resources?

1. Will cause the process to fail if taken away
2. **Can be taken away from a process with no ill effects**
3. Can share among processes
4. None of the other choices

Q27: Assume the Memory Manager receives a request for a block of 200. When the best-fit algorithm is used, is the beginning address of the block granted by the Memory Manager.

|  |  |
| --- | --- |
| Beginning Address of Hole | Hole Size |
| 4075 | 105 |
| 5225 | 5 |
| 6785 | 600 |
| 7650 | 20 |
| 7600 | 205 |
| 10250 | 4050 |

Select one:

A. 15125

**B. 7600**

C. 6785

D. 10250

Q28: The policy is based on the theory that the best page to remove is the one that has been in memory the longest

1. LIFO
2. LRU
3. NRU
4. **FIFO**

Q29: A special register that contains the address of the next instruction to be fetched is called:

1. Instruction Register (IR)
2. **Program Counter (PC)**
3. Program Status Word (PSW)
4. All of the other choices

Q30: Which of the following is not a CPU scheduling criterion?

1. CPU utilization
2. **Burst time**
3. Throughput
4. Response time

Q31: 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. procedures
2. **protocols**
3. policies
4. rules

Q32: Which of the following is appropriate to determine program size and create page table?

1. Process creation
2. Process execution
3. Page fault time
4. Process termination time

Q33: Which of the following conditions must be held to provide good solution for mutual exclusion?

1. No two processes simultaneously in critical region
2. No assumptions made about speeds or numbers of CPUs
3. No process running outside its critical region may block another process
4. No process must wait forever to enter its critical region
5. All of the other choices

Q34: Which of the following environments preemption is essential?

1. Batch
2. Interactive
3. Real time
4. **None of the other choices**

Q35: What is Software proposal in the solution of Mutual exclusion with Busy waiting?

1. Message passing
2. Monitors
3. Peterson's Solution
4. **All of the other choices**

Q37: Which of the following is not a condition necessary for deadlock to exist?

1. Mutual-exclusion condition
2. Circular-wait condition
3. Hold and wait condition
4. **Preemption condition**

Q38: A directory in UNIX/Linux consists of:

1. **I-node number and file name**
2. File name, file size, location of the file on disk
3. File name, file size, location of the file on disk, date created, owner ID
4. None of the other choices

Q39: In separating I/O and memory space system, the set of I/O ports form the I/O port space. This mechanism allows:

1. Programs in user space can easily access to I/O devices
2. Only programs in kernel can access to I/O devices
3. **Both programs in user space and kernel can access to I/O devices**
4. None of the other choices

Q40: In a directed graph used to model deadlock, processes are represented using

1. **Squares**
2. Cicularr
3. Ellipse
4. Rectangle

Q41: A simplest way to break a deadlock is to A preempt a resource

1. Rollback
2. **kills one of the processes**
3. locks one of the processes

Q42: Which of the following is not a step in the boot process?

1. Configuration and customization settings are checked.
2. The BIOS is activated by powering on the CPU.
3. **The antivirus program checks all files for viruses**
4. The operating system is loaded into RAM.

Q44: Which of the events that causes the processes to be created, when an operation system is booted?

1. **System initialization**
2. Execution of a process creation system call
3. User request to create a new process
4. Initiation of a batch job

Q46: Which of the following statements is incorrect about Translation Look-aside Buffer (TLB)?

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

Q47: Which of the following cannot be shared among different threads of a process? A Process code

1. File handles
2. Process data
3. **Stack**

Q48: 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 use all-in to service.

How many percent of the CPU does the interrupt overhead cost?

1. **4% of the CPU**
2. 93% of the CPU`
3. 7% of the CPU
4. 96% of the CPU

Q50: Which of the following process state transitions is correct, when the scheduler picks a process from the ready queue to run?

1. Running -> Blocked (waiting)
2. Running -> ready
3. Blocked (waiting) -> ready
4. **Ready -> running**
5. What is the main characteristic of real-time operating system?
6. Multiple CPU
7. Time-sharing
8. **Time is key parameter**
9. Many I/O devices
10. Which of following is true about main memory in the memory hierarchy?
11. Small amount of fast expensive memory
12. Some medium-speed medium price
13. Gigabytes of slow cheap memory
14. None of the other choices
15. Suppose a virtual address space of 2^28 words and the page size is 2^12 words. If the virtual 1234567 in Hexadecimal, what would be the page number in Hexadecimal?

A. 123

**B. 1234**

C 12345

D. 123456

1. The scheduling strategy where each process in the queue is given a certain amount of time elapsed, the process is preempted and added to the end of the ready queue is referred to as
2. Prioritization
3. **Round-Robin**
4. LIFO
5. All of the other choices
6. Failure to lock database records before updating them may result in a between process

A Struggle

1. **Race**
2. Deadlock
3. Livelock
4. The major operating system services provide mechanisms for secure and efficient are A Communication between processes

B. File manipulation

C Execution of a program, I/O operations performed by it, and detecting and reporting error

**D. All of the other choices**

1. When there is an excessive amount of page swapping between main memory and secondary operation becomes inefficient, which is called .
2. excessive demand paging
3. hot swapping **C thrashing**

D. Over swapping

1. The methods determine where page is on the disk when it is paged out is
2. Paging to a static swap area
3. Backing up pages dynamically
4. Both Paging to a static swap area and Backing up pages dynamically
5. None of the other choices
6. Which mechanism is described as “the device controller sneaks in and steals an occasional the CPU once in a while delaying it slightly”?
7. Interrupt stealing
8. Cycle sneaking **C Cycle stealing**

D. All of the others

1. Multiprogramming increases processor efficiency by
2. Increasing processor speed
3. **Taking advantage of time wasted by long wait I/O handling**
4. C Eliminating all idle processor cycles

D. All of the other choices

1. Assume jobs A-D arrive in quick succession in the READY queue. Using round robin scheduling (quanturn=4), the turnaround time for job D is .

Arrival time: 0 1 2 3 Job: A B C D

CPU cycle. 8 4 9 5

A 7

1. 20
2. 22
3. 24
4. The general role of an operating system is to:
5. Act as an interface between various computers
6. **Provide a set of services to system users**
7. Manage files for application programs
8. None of the other choices
9. Assume the following events and actions take place. The following statement is true. Event Action
10. P1 requests and is allocated R1.
11. P2 requests and is allocated R2
12. P3 requests and is allocated R3.
13. P1 requests R2
14. P2 requests R3.
15. P3 requests R1
16. There is no deadlock
17. Event 4 caused deadlock
18. Event 5 caused deadlock **D Event 6 caused deadlock**
19. allocation allows fies to use any storage space available on the disk.
20. Contiguous storage
21. **Noncontiguous storage**
22. Fragmented storage
23. Add-on storage
24. The aspect of disk performance that represents the time it takes to position the head a the desired track is known as
25. **Seek time**
26. Rotational delay
27. Access time
28. None of the other choices
29. Which RAID level employs a Hamming code to correct single bit errors and detect double bit errors ?
30. 1
31. **2**
32. 3
33. 4
34. 5
35. 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.

2 4 6 8 10

2 6 12 20 30 = 70/4

1. ~~14 minutes~~
2. 8 minutes
3. 6 minutes
4. 18.8 minutes
5. Which is space efficiency, if 4KB-file using file system with 8KB-block? **A. 50%**

B. 75%

C. 25% .

D. 100%

1. Which of the following statement is not true about separating I/O and memory space?
2. Device drivers must be written using assembly language
3. Programs must use 2 instructions to test whether the device is ready
4. There is special protection mechanism to keep user processes from performing I/O
5. **Caching a device control register would be disastrous**
6. A simplest way to break a deadlock is to:
7. Preempt a resource
8. Rollback
9. **Kills one of the processes**
10. Locks one of the processes
11. 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. **The event is release of a currently held resource**
2. The event is press some key on keyboard
3. The event is some mouse click
4. None of the other choices
5. In "No Memory Abstraction" the static relocation technique is
6. **When the program is loaded at address n, the constant n was added to every program address**
7. When the program is compiled, the address of program is added with the constant value where the

program will be loaded

1. After the program is loaded at address n, the constant n is stored at a particular register
2. None of the other choices
3. Which of the following statements about the task of device controller of I/O devices is correct?
4. Convert serial bit stream to block of bytes
5. Perform error correction as necessary C Make available to main memory

**D. All of the other choices**

1. 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 tumaround time for FCFS scheduling. Ignore process switching overhead
2. 17 minutes
3. 18 minutes
4. **18.8 minutes**
5. 20 minutes
6. Which of the following is not file structure?
7. Byte sequence
8. Record sequence
9. **Ring**
10. Tree
11. Which of the following is correct about Shortest Job First scheduling algorithm?
12. Avoid Starvation
13. **Minimize average wasting time**
14. Avoid Starvation and Minimize average waiting time
15. None of the other choices
16. Which of the following is not true about process hierarchy?
17. A process creates child process. The child process can itself creates more processes, forming a process hierarchy
18. In Unix, a process and all its children and further descendants together form a process group
19. Window has no concept of a process hierarchy
20. **A process may have more than one parent**
21. Increasing file system performance is implemented by
22. Buffer cache
23. Block Read Ahead C Defragmenting Disks

**D. All of the other choices**

1. A well-known Real-Time operating system is
2. TinyOS
3. MS DOS

C Personal Operating System

**D. None of the others**

1. A disk queue with requests for I/O blocks on cylinders in orders: 10,22,20,2,40, 6,

38. Assume that the disk head is initially at cylinder 20 How many cylinder do Total head movement using FCFS?

A. 146

1. 60
2. 58
3. None of the others
4. Which of the following conditions that causes the processes to be terminated when the processes have a program bug?
5. Normal exit (voluntary)
6. **~~Error exit (voluntary)~~**
7. Fatal error (involuntary)
8. Killed by another process (involuntary)
9. If there are 128 pages and the page size is 32 K words, what is the length of logical address?
10. 24 bits
11. 28 bets
12. 30 bits
13. **22 bits**
14. Assume jobs A-D arrive at almost the same time in the READY queue. Determine the average turnaround time for SJF scheduling Ignore process switching overhead

Job: A B C D

CPU cycle: 5 2 6 4

2 4 5 6

2+ 6+11+17

A. 5.5

B. 6.8

**C. 9.0**

D. 11.1

BDAC

2456

2

6

11

17

1. Which deadlock condition does “Spool everything” attack?
2. **Mutual exclusion**
3. Hold and wait
4. No preemption
5. Circular-wait condition
6. Which of the following environments preemption is essential?
7. Batch
8. Interactive
9. Real time
10. **None of the other choices**
11. Which of the following is not special file?
12. Character special file
13. **Stream special file**
14. Block special file
15. None of the other choices
16. One of the primary disadvantages of contiguous storage is that .
17. It is hard to implement and manage
18. It is difficult to find information in files
19. File can't be expanded unless there is empty space available immediately following it
20. It is an inefficient use of space
21. Which of the following statements is incorrect about Translation Look-aside Buffer (TLB)?
22. TLB only maintains a subset of the entries stored in the full memory-based page table
23. When there is a TLB miss the system needs to access the page table
24. **T**he use of TLB eliminates the need for keeping a page table in memory
25. None of the other choices
26. Consider the following state of a system with four processes, P1, P2 P3 and P4, and five types of resources RS1, RS2, RS3, RS4 and RS5

Process Allocated Matrix Request Matrix

----

-- --

-- --

-- -- --- -- -- --

-- --

-- ---

-- --

-- --

-- -- ---

-- --

P1 01010 01021 E(24144)

P2 00001 02031 A(01021)

P3 21000 02110

P4 01112 11021

Deadlocked processes are:

1. P1, P2
2. P1, P3
3. P3, P4
4. **P1, P4**
5. Which is not a goal of a scheduling algorithm for real-time systems?
6. Meeting deadlines.
7. Predictably **C Faimess**

D. None of the other choices

1. Which of the following is not a operating mode of CPU
2. User mode
3. Kernel mode

**C Management mode**

D. None of the other choices

1. Which of the following operating systems is an example of monolithic system?
2. UNIX
3. Windows XP
4. Mac OS
5. **MS-DOS**
6. Which of special register in the CPU points to the top of the current stack in the memory?
7. TO GO
8. PC C.PSW

**D. SP**

1. is when, in modem 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
2. Buffering
3. **Lagging**
4. Spooling
5. Spoofing
   1. The primary disadvantage of contiguous storage is that
      1. it is difficult to find information in files
      2. it is an efficient use of space
      3. **file can't be expanded unless there is empty space available immediately following**
      4. it is hard to implement and manage
   2. Raid level 2 get redundancy by
      1. distribution
      2. strip
      3. mirror
      4. **hamming code**
   3. When is the process transit the state from Ready to Running?
      1. The awaited event of process occurs
      2. The process is suspended by the scheduler
      3. The process waits for some event to occur
      4. The process is selected by the scheduler
   4. Choose the correct statement about User mode.
      1. Can execute any machine instruction.
      2. Protect the OS from errant users
      3. **Can execute a subset of the machine instructions**
      4. Can access and control all hardware computer components
   5. Which of following events will change the state of an active process from Running to Blocked?
6. The process is chosen by scheduler
7. **IO wait**
8. De-allocating all resources
9. Time-out (time slice expired)
   1. The entry of all the PCBS of the current processes is in
      1. Process unit
      2. Program counter
      3. Process register
      4. **Process table**
   2. A computer has 16GB of memory, with OS taking 4GB and each user program also taking up 384MB with an 87% average I/O wait CPU utilization of this computer is:

A. 95.53%

B. 77%

C. 98.84%

D. 90%

* 1. Which type of operating system is most suitable for Round Robin scheduling algorithm?

1. MS-DOS
2. Distributed
3. Real time
4. **Time sharing**
   1. allows a resource to be held by a process as long as it is needed
5. Resource holding
6. Mutual exclusion
7. Circular wait
8. **No preemption**
   1. As one of the virtual storage methods. virtual address space is divided into fixed-length areas. What is such a fixed-length area called?
9. Segment
10. **Page**
11. Frame
12. Sector
    1. Which process state means a process is finished executing?
13. **Terminate**
14. Running
15. Execute
16. Complete
    1. Assume the following events and actions take place. Which of following statement is true?
17. P1 requests and is allocated the printer R1.
18. P1 releases the printer R1.
19. P2 requests and is allocated the disk drive R2.
20. P2 releases the disk R2.
21. P3 requests and is allocated the plotter R3. (6) P3 releases the plotter R3.
22. P3 releases the plotter R3.
23. Event 4 caused deadlock.
24. Event 6 caused deadlock
25. Event 5 caused deadlock.
26. **There is no deadlock.**
    1. Which of the following parameters are used for evaluating a CPU scheduling algorithm?
27. Average CPU utilization: Average response time
28. **Average waiting time: Average turnaround time**
29. CPU utilization: Response time
30. Waiting time: Tumaround time
    1. PCB (Process Control Block) does contain the information about of each process:
31. **All of others.**
32. File management
33. Process management
34. Memory management
    1. Which is the name of the sensor operating system?
35. **TinyOS**
36. SLinux
37. Linux
38. TOS
    1. Which using clock replacement policy, a page with a reference bit of is replaced.
39. None of others
40. 0
41. 1
42. -1
    1. There are 4 page-frames available in real memory, and a process makes the list of page references as follow: 1->7 -> 2 -> 3 -> 2 -> 7 -> 1 -> 0 -> 1 -> 7 -> 3. How many page faults occur during execution of this process using the FIFO page replacement algorithm? Here, all page frames are empty at the beginning of the process.

There are four-page frames are given and an FIFO page replacement policy is used.

The given page size= 4,

The given page reference string is =  

**1-> 7-> 2-> 3-> 2-> 7-> 1-> 0-> 1-> 7 ->3**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Page**  **frames**  **size=**  **4** | **1** | **1** | **1** | **1** | **1** | **1** | **1** | **0** | **0** | **0** | **1** |
|  | **7** | **7** | **7** | **7** | **7** | **7** | **7** | **1** | **1** | **7** |
|  |  | **2** | **2** | **2** | **2** | **2** | **2** | **2** | **7** | **2** |
|  |  |  | **3** | **3** | **3** | **3** | **3** | **3** | **3** | **3** |
| **Page fault** | **F** | **F** | **F** | **F** | **H** | **H** | **H** | **F** | **F** | **H** | **H** |

1. 7
2. 8
3. 9
4. 6
   1. In the Transition States, processes that are in new State can transit to:
5. Running, Blocked
6. Ready, Blocked, Terminated.
7. Ready, Running
8. Running, Blocked.
   1. In the directed graph used to mode deadlock, represents deadlock.
9. any path
10. a dashed arrow
11. a solid arrow
12. **a cycle**
    1. Which one is the key concept in the design of I/O software of OS?
13. It should interact with the device drives and makes hardware alive.
14. It should be device dependent
15. It should support special devices in advance.
16. **It should be device independent**
    1. A well-known Embedded operating system is:
17. **QNX and VxWork**
18. TinyOS
19. Symbian OS and Palm OS
20. Windows 11
    1. 26. A disk queue with requests for I/O blocks on cylinders in orders: 15, 5, 25, 30, 10. Assume that the disk head is initially at cylinder 20 and the head move downward. When the Elevator algorithm is used. Average seek time is

**5 10 15 25 30**

**20-15-10-5-25-30= (5+5+5+20+5)/5=8**

A 6

1. 8
2. 4
3. 10
   1. Which statement is true about Thread?
4. A lightweight process where the context switching is high
5. **A lightweight process where the context switching is low**
6. None of others
7. Used to speed up paging
   1. Which statement is true about classification of a process based on its behavior?
8. A I/O-bound process spent most of its time for computing
9. A compute-bound process spent most of its time for 10 processing
10. A compute-bound process spent most of its time for computing
11. A compute-bound process sometimes spent most of its time for 10 waiting
    1. What will happen if a non-recursive mutex is locked more than once? A Starvation
12. Aging
13. **Deadlock**
14. Signaling
    1. What is a "stripping" in RAID?
15. Get undressed
16. **Distributing data over multiple drives**
17. Take away possessions from someone
18. Take away possessions from user process
    1. As one of the virtual memories, physical address space is divided into fixed-length areas. What is such a fixed-length area called?
19. **Page**
20. Segment
21. Frame
22. Sector
    1. The mounted file system is

A removing portion of the file system into a directory structure

B. deleting a file system

C. creating of a file system

**D attaching portion of the file system into a directory structure**

* 1. Which of the following statements about Random Access memory (RAM) is correct? A Stores all the files on the computer

1. **Is volatile**
2. Is typically faster than cache memory
3. Can only be read sequentially
   1. Many computer users and some operating systems call subdirectories as
4. files
5. **folders**

C databases

D. volumes

* 1. In the real time operating system

1. a task must be serviced by its deadline period
2. all processes have the same priority
3. kernel is not required
4. process scheduling can be done only once
   1. With respect to methods to solve deadlocks, (choose the best option)
5. Only one process is allowed to access a file at a time.
6. **Preemptable resources can be resolved deadlocks by reallocating resources from one process to another.**
7. Only one process is allowed to use CPU at a time.
8. Only one process is allowed to access network interface card at a time.
   1. Which RAID level duplicates all the disks?
9. **1**
10. 3
11. 5
12. 2
    1. What is true about preemptable resources?
13. Can share among processes
14. Will cause the process to fail if taken away
15. **Can be taken away from a process with no ill effects**
16. None of the others
    1. What are the design issues for paging system?
17. Load Control
18. Page Size
19. Shared Pages
20. Page fault handling
21. Shared Libraries
22. Mapped Files

A. (1) (2) (3) (4) (5)

**B. (1) (2) (3) (5) (6)**

C. (1) (2) (4) (5) (6)

D.(2) (3) (4) (5) (6)

* 1. Which of the following is NOT a valid deadlock prevention scheme?

1. Request and all required resources be allocated before execution
2. **Never request a resource after releasing any resource**
3. Release all resources before requesting a new resource
4. Number the resources uniquely and never request a lower numbered resource than the last one requested.
   1. Which of the following provides time period for the context switch?
5. Timer
6. **Time slice**
7. Clock
8. Counter
   1. K có
   2. CPU scheduling is the basic of operating system.
9. real time
10. **multiprogramming**
11. batch
12. monoprogramming
    1. Each device attached to your computer comes with a special program called a that facilitates the communication between the device and the OS.
13. device configurator
14. **device driver**
15. translator
16. communication utility
    1. Which of the following is correct about the advantages of layered system?
17. **Easier to extend and Easier to debug from lower to upper layer**
18. Simple and high performance
19. Easier to debug from lower to upper layer
20. Easier to extend
    1. Which is not one of the goals of the operating system?
21. **Compile program language**
22. Execute user programs
23. Controls and coordinates the use of hardware
24. Make the hardware efficiently and convenient to use
    1. Which of the following is the appropriate purpose of defragmentation of hard disks?
25. **To access disk files faster and more efficiently**
26. To clean up temporary and junk files
27. To delete IBG and increase capacity
28. To protect disk drives from physical failures
    1. Page hit occurs when
29. **a requested page is in memory**
30. a requested page is in system
31. an exception is thrown
32. a requested page is in CPU
    1. Four batch jobs P1 through P4 arrive at a computer center at almost the same time. They have estimated running times of 10,7,5 and 4 minutes. For SJF CPU scheduling algorithm, determine the mean process waiting time, ignore process switching overhead

4-5-7-10

4+9+16+26

A. 10

B. 725

C 18.75

D. 13.75

1. Which of the following environments preemption is essential?
   1. Batch
   2. Interactive
   3. Real time
   4. **None of the other choices**
2. The page table for each process maintains:

**A The page frame location for each page of the process**

B The page location for each frame of the process

C The physical memory location of the process D None of the other choices

1. Failure to lock database records before updating them may result in a — between processes.
   1. Struggle **B.Race**

D. Deadlock

C. Livelock

1. Which of the following statements is incorrect about Translation Look-aside Buffer (TLB)?
2. A TLB is sometimes known as an associative memory
3. Each entry of a TLB contains the information about one page, including the virtual page or corresponding page frame.
4. **A TLB miss implies a disk operation will follow**
5. None of the other choices
6. allocation allows files to use any storage space available on the disk.
   1. Contiguous storage
   2. **Noncontiguous storage**
   3. Fragmented storage
   4. Add-on storage
7. Sometimes it happens that a thread wants to give another thread a chance to run. It can establish this goal by calling
8. thread\_create
9. thread\_exit
10. thread\_wait
11. thread\_yield
12. Which of the following is not a condition necessary for a deadlock to exist?
13. Mutual-exclusion condition
14. Circular-wait condition
15. Hold and wait condition
16. **Preemption condition**
17. Assume that four jobs A-D require the CPU cycles listed below. Using the Shortest Job First job is run first. Arrival time: 4 1 0 2 Job: A B C D CPU cycle: 5 2 6 4
18. A
19. B
20. **C**
21. D

11.A system with absolute guarantees that a certain action will occur by certain time is called:

1. **Hard real-time system**
2. Soft real-time system
3. Middle real-time system
4. None of the other choices
5. Which of the following statements is not true about separating I/O and memory space?
6. Device drivers must be written using assembly language
7. Programs must use 2 instructions to test whether the device is ready
8. There is special protection mechanism to keep user processes from performing I/O
9. **Caching a device control register would be disastrous**
10. Which of the following statements is not a task of file management of OS?
    1. Create, manipulate and delete File/Directory
    2. Mapping files onto secondary storage
    3. File backup on stable (nonvolatile) storage media.
    4. **Allocate and deallocate memory space as needed**
11. Which of the following operating systems has the concept of a process hierarchy?
    1. Win32
    2. MS-DOS
    3. **Unix**
    4. CP/M
12. 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. 10,8 minutes
2. 12,8 minutes
3. 16,8 minutes
4. 54 minutes
5. What is the main characteristic of a real-time operating system?
   1. Multiple CPU
   2. Time-sharing
   3. **Time is key parameter**
   4. Many I/O devices
6. An example of the key differences that can exist across (and even in) types of I/O devices is:
7. Data rate
8. Data representation
9. Error conditions
10. **All of the other choices**

20.A well-known operating system for Handheld Computer is:

1. TinyOS
2. MS-DOS
3. **Symbian OS and Palm OS**
4. e-COS
5. Which of the following is not a special file?
   1. Character special file
   2. **Stream special file**
   3. Block special file
   4. None of the other choices
6. The general role of an operating system is to:
7. Act as an interface between various computers
8. **Provide a set of services to system users**
9. Manage files for application programs
10. None of the other choices
11. The actual location in main memory is called a(n):
12. Relative address
13. Logical address
14. **Absolute address**
15. None of the other choices

25 .Which of special register contains the condition code bits, the CPU priority, the mode bit and other control bits?

1. Instruction Register (IR)
2. Program Counter (PC)
3. **Program Status Word (PSW)**
4. None of the other choices
5. 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?

A. 50%

**B. 25%**

C. 75%

D. None of the other choices

1. Which deadlock condition does "Spool everything" attack?
   1. **Mutual exclusion**
   2. Hold and wait
   3. No preemption
   4. Circular-wait condition
2. Assume jobs A-D arrive at almost the same time in the READY queue. Determine the average turnaround time for Round Robin scheduling (quantum-2). Ignore process switching overhead:

Job: A B C D

CPU cycle: 5 2 6 4

A. 5.5

B. 12.5

C. 9.0

D. 10.5

1. Assume the Memory Manager receives a request for a block of 200. When the first-fit algorithm is used ,is the beginning address of the block granted by the Memory Manager.

|  |  |
| --- | --- |
| Beginning Address | Memory Block Size |
| 4075 | 105 |
| 5225 | 5 |
| 6785 | 600 |
| 7560 | 20 |
| 7600 | 205 |
| 10250 | 2050 |

**A. 7600**

B. 10250

C. 6785

D. 4075

1. How many level of scheduling are used in computer
2. 1
3. 2
4. **3**
5. 4
6. If there are 64 pages and the page size is 2048 words, what is the length of logical address?
7. 14 bits
8. 15 bits
9. 16 bits
10. **17 bits**
11. When selecting the proper time quantum it should be long enough to allow run to completion
12. 20
13. 60
14. **80**

D. 100

33.A disk queue with requests for I/O blocks on cylinders in orders: 10, 22, 20, 2, 40, 6, 38. Assume that the disk head is initially at cylinder 20. How many cylinder do Total head movement using SSF?

A. 146

1. 60
2. 58
3. None of the others
4. Which are allocation methods of disk blocks for files?
5. Contiguous allocation
6. Linked allocation
7. Indexed allocation
8. **All of the other choices**
9. 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. 6 minutes
2. 12.8 minutes
3. 18.8minutes
4. 16.8 minutes
5. What is not the way to recover from a deadlock:
6. Preempt a resource
7. Rollback
8. Killing processes
9. **Locks one of the processes**
10. Which is not true about the method of backing store: "Paging to a static swap area"?
    1. The swap area on the disk is as large as the process virtual address space
    2. Calculating the address in swap area requires knowing only where the process' paging area begins
    3. **Requires a disk map in memory**
    4. A page that is in memory always have shadow copy on disk
11. Assume jobs A-D arrive in quick succession in the READY queue. Using round robin

scheduling (quantum-4),f

the turnaround time for job C is Arrival time: 0 1 2 3

Job: A B C D

CPU cycle: 8 4 9 5

* 1. 7
  2. 20
  3. 22
  4. **24**

1. Which is not a goal of a scheduling algorithm for real-time systems?
2. Meeting deadlines
3. Predictability
4. **Fairness**
5. None of the other choices
6. Which one cannot be able to solve the race condition?
7. TSL
8. Shared memory
9. Semaphore
10. Monitor
11. Of the three components of access time in a disk is the longest.
    1. **Seek time**
    2. Search time
    3. Transfer time
    4. Delay time
12. Consider the following state of a system with four processes, P1, P2, P3 and P4, and five types of resources RS1, RS2, RS3, RS4 and RS5. Request Matrix

Process Allocated Matrix Request Matrix

—

|  |  |  |  |
| --- | --- | --- | --- |
| P1 | 01010 | 01021 | E=(24144) |
| P2 | 00001 | 02031 | A=(01021) |
| P3 | 21000 | 02110 |  |
| P4 | 01112 | 11021 |  |

Deadlocked processes are:

1. P1, P2
2. P1, P3
3. P3, P4
4. **P1, P4**
5. Which of following is true about main memory in the memory hierarchy?
6. Small amount of fast expensive memory
7. **Some medium-speed medium price**
8. Gigabytes of slow cheap memory
9. None of the other choices
10. Which of the following process state transitions is correct, when the operating system discovers that process cannot continue right now because of is not enough resource?
11. Running -> Blocked (waiting)
12. Running->ready
13. Blocked (waiting) -> ready
14. Ready-> running
15. Which of the following is true about the data rate for disk management?
    1. The larger the block size is the faster the data rate is
    2. **The larger the block size is the lower the data rate is**
    3. The larger the block size is lesser the disk space is
    4. None of the other choices
16. Which of these statements about the algorithm "First fit" is true?
    1. **Memory Manager scans along the list of segments until it finds a hole that is big enough.**
    2. Memory Manager starting searching the list of segments from the place where it left off last time.
    3. Memory Manager searches the entire list of segments from beginning to end and take smallest hole that is

adequate.

* 1. None of the other choices 48.The Joliet Extensions provide

1. Long file name supported Unicode character
2. Directory nesting deeper than 8 levels
3. Directory names with extensions
4. **All of the other choices**
5. DMA operations require the following information from the processor
6. Address of I/O device
7. Starting memory location to read from and write to
8. Number of words to be read or written
9. **All of the other choices**
10. How many ways is Thread implemented?
11. 1
12. 2
13. **3**
14. None of the other choices
15. Assume the following events and actions take place. The following statement, is true. Event Action
16. P1 requests and is allocated the printer R1.
17. P1 releases the printer R1.
18. P2 requests and is allocated the disk drive R2.
19. P2 releases the disk R2.
20. P3 requests and is allocated the plotter R3.
21. P3 releases the plotter R3.
22. **There is no deadlock**
23. Event 4 caused deadlock
24. Event 5 caused a deadlock.
25. Event 6 caused a deadlock.
26. Suppose a virtual address space of 2^28 words and the page size is 2^12 words. If the virtual address is

1234567 in Hexadecimal, what would be the page number in Hexadecimal? A. 123

**B. 1234**

C. 12345

D. 123456

1. Which of the following is correct about the advantages of layered system?
2. Easier to extend
3. Easier to debug from lower to upper layer
4. **Easier to extend and Easier to debug from lower to upper layer**
5. None of the other choices

57.\_\_\_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

A. Buffering

B. Lagging

C. Spooling

D. Spoofing

1. What is a "stripping" in RAID?
2. **Distributing data over multiple drives**
3. Take away possessions from someone
4. Get undressed
5. All of the other choices

Disk requests come to a disk driver for cylinders in the order 10, 22, 20, 2, 40, 6 and 38, at a time when the disk drive is reading from cylinder 20. The seek time is 6 ms/cylinder. The total seek time, if the disk arm scheduling algorithms is first-comefirst-served is

1. 360 ms

2. 850 ms

3. 900 ms

4. None of the above

Data:

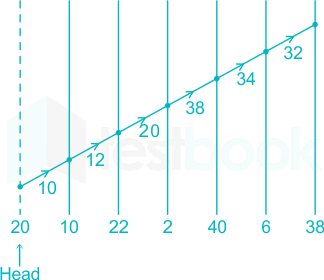
Seek time = t = 6 ms per cylinder

Head = 20

Concept:

Since, it is a first-come-first-serve scheduling requests will be served in the given sequence: 10, 22, 20, 2, 40, 6 and 38

Diagram



Formula:

Total head movement = (20 - 10) + (22 - 10) + (22 - 2) + (40 - 2) + (40 - 6) + (38 - 6) = = 10 + 12 + 20 + 38 + 34 + 32 = 146 Total Seek time = 146 × 6 = 876 ms

**Consider a disk system having 60 cylinders. Disk requests are received by a disk drive for cylinders 10, 22, 20, 2, 40, 6, and 38, in that order. Assuming the disk head is currently at cylinder 20, what is the time taken to satisfy all the requests if it takes 2 milliseconds to move from one cylinder to an adjacent one and Shortest Seek Time First (SSTF) algorithm is used ?**

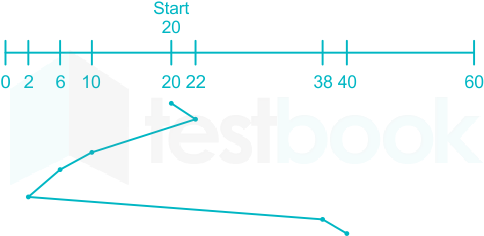
**1. 240 milliseconds**

**2. 96 milliseconds**

**3. 120 milliseconds**

**4. 112 milliseconds**

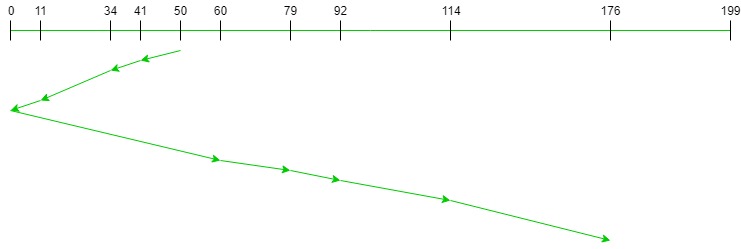
**Shortest Seek Time First (SSTF)**

****

**SSTF =(22-20+22-10+10-6+6-2+38-2+40-38)=2+12+4+4+36+2=60It takes 2 milliseconds to move from one cylinder to adjacent one = 60x2 =120 milliseconds**

**Input:   
Request sequence = {176, 79, 34, 60, 92, 11, 41, 114}  
Initial head position = 50  
Direction = left (We are moving from right to left)  
Output:  
Total number of seek operations = 226  
Seek Sequence is  
41  
34  
11  
0  
60  
79  
92  
114  
176**

**The following chart shows the sequence in which requested tracks are serviced using SCAN.**

****

***SCAN Disk Scheduling Algorithm***

**Therefore, the total seek count is calculated as:**

**= (50-41) + (41-34) + (34-11) + (11-0) + (60-0) + (79-60) + (92-79) + (114-92) + (176-114)  
= 226**

# If a magnetic disc drive has 100 cylinders, each containing 10 tracks of 10 sectors, and each sector cancontain 128 bytes, what is the maximum capacity of the disc drive in KB?

A. 160,000 B. 1,280

C. 1,250 D. 1,280,000

The maximum capacity of the disk is 1280000 bytes.

Given data :

1 sector contains 128 bytes.

There are 10 sectors in one track.

One cylinder contains 10 tracks.

There are 100 cylinders.

• The total number of tracks

= Number of cylinders × Tracks in one cylinder

= 100×10

= 1000

• Number of sectors

= Number of tracks × Sectors in one track

= 1000×10

= 10000

• Total amount of data

= Total number of sector × data present in one sector

= 10000×128

= 1280000 bytes

The total capacity of data in terms of bytes is 1280000 bytes

# According to the specifications of a particular hard disk, a seek time takes 0.3 milliseconds betweenadjacent tracks. If the disk has 100 cylinders how long will it take for the head to move from the innermost cylinder to the outermost cylinder.

* 1. 30 milliseconds B. 300 microseconds

C. 3000 microseconds D 0.3 seconds

# A computer that is advertised as having a 96K byte DRAM memory and a 2.1 Gigabyte hard drivehas

* 1. 96K bytes of secondary memory and 2.1 Gigabytes of primary memory
  2. 2.1 Gigabytes of auxiliary memory and 96 K bytes of primary memory
  3. 96K bytes of cache, 2.1 Gigabytes of primary memory
  4. 2.1 Gigabytes of auxiliary memory, 96 K bytes of primary memory and 96 bytes of cache

# The average time required to reach a storage location in memory and obtain its contents is called the

* 1. Seek time B. Turnaround time

C. Access time D. Transfer time

# The amount of time required to read a block of data from a disk into memory is composed of seektime, rotational latency, and transfer time. Rotational latency refers to

* 1. The time it takes for the platter to make a full rotation
  2. The time it takes for the read-write head to move into position over the appropriate track
  3. The time it takes for the platter to rotate the correct sector under the head
  4. None of the others

# The method of placing the heads and the discs in an air tight environment is called as ……..

* 1. RAID Arrays B. ATP tech

C. Winchester technology D. Fleming reduction

**Explanation**: <numeric> The Disks and the heads operate faster due to the absence of the dust particles.

# Which of the following is a component of the disk system?

* 1. Disk B. Disk drive

C. Disk controller D. All of the others

# If the drive has 20 surfaces, how many heads will it have?

A. 1 B. 5

C. 10 D. 20

**Explanation**: <numeric> Each surface will have its own head to perform read/write operation.

# The process divides the disk into sectors and tracks.

* 1. Creation B. Initiation

C. Formatting D. Modification

**Explanation**: <numeric> The formatting process deletes the data present and does the creation ofsectors and tracks.

# The data can be accessed from the disk using ……….

* 1. Surface number B. Sector number

C. Track number D. All of the others

# The is the minimum storage unit of a hard drive.

* 1. Track B. Sector

C. Cluster D. Cylinder

# To distinguish between two sectors we make use of ……….

* 1. Inter sector gap B. Splitting bit

C. Numbering bit D. None of the others

**Explanation**: <numeric> This means that we leave <để lại> a little gap between each sectors todifferentiate between them.

# 13 is used to deal with the difference in the transfer rates between the drive and the bus.

A. Data repeaters B. Enhancers

C. Data buffers D. None of the others

**Explanation**: <numeric> The buffers are added to store the data from the fast device and to send it tothe slower device at its rate.

# What common characteristics are shared by all RAID levels?

* 1. Set of physical disk drives viewed by the operating system as a single logical drive
  2. Data are distributed across the physical drives of an array in a scheme known as striping
  3. Redundant disk capacity is used to store parity information, which guarantees data recoverability incase of a disk failure
  4. All of the others

# The solution to the problem of reliability is the introduction of ……….

* 1. Aging B. Scheduling

C. Redundancy D. Disks

# RAID splits file(s) into many segments, and sends the segments to several disks. Files that have beensegmented in this way are called:

* 1. Striped File B. Striped Data

C. Striped Array D. None of the others

# Which of the following is the RAID level no redundant?

A. 0 B. 1

C. 2 D. 3

# Which of the following is the RAID level refers to memory-style ECC organization?

A. 1 B. 2

C. 3 D. 4

# Which of the following is the RAID level distributes parity and data across all the disks?

A. 3 B. 4

C. 5 D. 6

# RAID level 1+0 is used because RAID level 1 provides ………. whereas RAID level 0 provides ……….

* 1. Performance, Redundancy B. Performance, Reliability C. Redundancy, Performance D. Reliability, Performance

# register keeps tracks of the instructions stored in program stored in memory.

* 1. AR (Address Register) B. XR (Index Register)

C. PC (Program Counter) D. AC (Accumulator)

# An interface that provides a method for transferring binary information between internal storage andexternal devices is called as …

* 1. I/O interface B. Input interface

C. Output interface D. I/O bus

# An interface that provides I/O transfer of data directly to or form the memory unit and peripheral is termed as …

* 1. DDA B. Serial interface

C. BR D. DMA

# External, or peripheral, devices include:

* 1. Human readable B. Machine readable

C. Communication D. All of the others

# With the functions of an I/O module, which of the following statements is false:

* 1. Control and timing
  2. A module only connects to a peripheral device
  3. Exchange information with the processor, with peripherals
  4. Data buffers, error detection

# I/O addressing methods:

* 1. Memory-mapped I/O
  2. Isolated I/O
  3. Both memory-mapped I/O and isolated I/O
  4. None of the others

# In memory-mapped I/O…

* 1. The I/O devices and the memory share the same address space
  2. The I/O devices have a seperate address space
  3. The memory and I/O devices have an associated address space
  4. A part of the memory is specifically set aside for the I/O operation

**Explanation**: It’s the different modes of accessing the i/o devices.

# With isolated I/O, ...

* 1. The I/O devices and the memory share the same address space
  2. The I/O devices have a seperate address space
  3. The memory and I/O devices have an associated address space
  4. A part of the memory is specifically set aside for the I/O operation

**Explanation**: It’s the different modes of accessing the i/o devices.

# There are three methods for performing I/O:

* 1. Interrupt-driven I/O, System-driven I/O, DMA
  2. Interrupt-driven I/O, System-driven I/O, Programmed I/O
  3. Programmed I/O, Interrupt-driven I/O, DMA
  4. Programmed I/O, System-driven I/O, DMA

# The method of accessing the I/O devices by repeatedly checking the status flags is …

* 1. Programmed I/O B. Memory-mapped I/O

C. I/O mapped D. None of the others

**Explanation**: In this method the processor constantly checks the status flags , and when it finds that theflag is set it performs the appropriate operation.

# The method of synchronising the processor with the I/O device in which the device sends a signalwhen it is ready is …

* 1. Exceptions B. Signal handling C. Interrupt-driven I/O D. DMA

**Explanation**: This is a method of accessing the I/O devices which gives the complete power to thedevices, enabling them to intimate the processor when they’re ready for transfer.

# The process where in the processor constantly checks the status flags is called as …

* 1. Polling B. Inspection

C. Reviewing D. Echoing

# With Programmed I/O, which of the following statements is false:

* 1. Use input/output commands in the program to exchange data with the I/O ports
  2. Peripherals are active objects in data exchange
  3. When executing the program, encountering input/output commands, the CPU controls data exchangewith peripherals
  4. Peripherals are passive objects in data exchange

# With Programmed I/O, which of the following statements is true:

* 1. This is the simplest method to exchange data
  2. This is the fastest method to data exchange
  3. Complex circuit design
  4. None of the others

# With Interrupt-driven I/O, which of the following statements is false:

* 1. Peripherals are the active object in data exchange
  2. CPU does not have to wait for the availability of peripherals
  3. CPU have to wait for the availability of I/O module
  4. I/O module interrupt CPU when it is in ready state

# With Interrupt-driven I/O, which of the following statements is true:

* 1. Peripherals are the active object in data exchange
  2. The method is fully processed by hardware
  3. CPU is an active object in data exchange
  4. The method is fully processed by software

# The DMA differs from the interrupt mode by …

* 1. The involvement of the processor for the operation
  2. The method accessing the I/O devices
  3. The amount of data transfer possible
  4. Both the involvement of the processor for the operation and the amount of data transfer possible

**Explanation**: DMA is an approach of performing data transfers in bulk between memory and theexternal device without the intervention of the processor.

# The DMA transfers are performed by a control circuit called as …

* 1. Device interface B. DMA controller

C. Data controller D. Overlooker

**Explanation**: The Controller performs the functions that would normally be carried out by the processor.

# In DMA transfers, the required signals and addresses are given by the …

* 1. Processor B. Device drivers

C. DMA controller D. The program itself

**Explanation**: The DMA controller acts like a processor for DMA transfers and overlooks <bỏ qua> the entire process.

# The technique whereby the DMA controller steals the access cycles of the processor to operate iscalled as …

* 1. Fast conning B. Memory Con

C. Cycle stealing D. Memory stealing

**Explanation**: The controller takes over the processor’s access cycles and performs memory operations.

# The operating system is an example of a computer ……….

* 1. Object B. File system

C. Program D. Desktop

# Which of the following is the primary purpose of an operating system?

* 1. To make the most efficient use of the computer hardware
  2. To allow people to use the computer
  3. To keep systems programmers employed
  4. To make computers easier to use

# The key services provided by an OS:

* 1. Create and execute programs
  2. Control access to I/O devices, files and system resources
  3. Accounting, error detection and response
  4. All of the others

# One of the function of operating system is it serves an interface between user and ……….

* 1. Software B. Hardware

C. Utilities D. Data ware

# In an system the user/programmer interacts directly with the computer, usually through a

**keyboard/display terminal to request the execution of a job or to perform a transaction.**

* 1. Batch B. Multiprogramming

C. Interactive D. None of the others

# Which of the following is NOT a function of operating system?

* 1. Resource Manager B. Storage Manager

C. Process Manager D. Software Manager

# Long-term scheduling is:

* 1. The decision to add which programs to the system for processes
  2. The decision to add to the number of processes that are partially or fully in main memory
  3. The decision as to which available process will be executed by the processor.
  4. The decision as to which process's pending I/O request shall be handled by an available I/O device.

# Medium-term scheduling is:

* 1. The decision as to which process's pending I/O request shall be handled by an available I/O device.
  2. The decision as to which available process will be executed by the processor.
  3. The decision to add to the number of processes that are partially or fully in main memory
  4. The decision to add which programs to the system for processes

# Short-term scheduling is:

* 1. The decision to add which programs to the system for processes
  2. The decision as to which available process will be executed by the processor.
  3. The decision to add to the number of processes that are partially or fully in main memory
  4. The decision as to which process's pending I/O request shall be handled by an available I/O device.

# What is a process?

* 1. A program in execution
  2. A \*.exe file
  3. A executable file stored in external memory
  4. None of the others

# What is the purpose of the process?

A. Multiprocessing B. Multiprogramming C. Multicore D. All of the others

# In the process state transition diagram, which state corresponding to a program is admitted by theLong-term scheduler?

* 1. New B. Ready

C. Running D. Halted

# In the process state transition diagram, will initialize the process, moving it to the ready state.

* 1. Long-term scheduler B. Medium-term scheduler

C. Short-term scheduler D. None of the others

# In the process state transition diagram, the transition from the READY state to the RUNNING state indicates that:

* 1. A process was preempted by another process
  2. A process has blocked for a semaphore or other operation
  3. A process is done waiting for an I/O operation
  4. A process was just created

# The state corresponding to the process has terminated and will be destroyed by the OS is called:

* 1. New B. Ready

C. Running D. Halted

# Copying a process from memory to disk to allow space for other processes is called?

* 1. Page Fault B. Deadlock

C. Demand Paging D. Swapping

# The purpose of swapping is:

* 1. To remove processes not in a ready state
  2. To provide for efficient use of main memory for processes execution
  3. To add processes in a ready state to main memory
  4. None of the others

# Swapping is executed by ..........

* 1. Long-term scheduler B. Medium-term scheduler

C. Short-term scheduler D. None of the others

# If a process may be dynamically assigned to different locations in main memory, what is implicationfor the addressing mechanism?

* 1. The addressing mechanism must keep track of the physical addresses of the process
  2. The addressing mechanism must keep track of the logical addresses used for swapping out theprocess
  3. The addressing mechanism must keep track of the physical addresses of the process, as well as thelogical addresses used for swapping out the process
  4. None of the others

# The purpose of a TLB is:

* 1. To cache page translation information
  2. To cache frequently used data
  3. To hold register values while a process is waiting to be run
  4. To hold the start and length of the page table

Which of following statements about the memory hierarchy is false?  
[A]Small amount of fast expensive memory - cache  
[B]Gigabytes of slow cheap disk storage  
[C]None of the other choices  
[D]Some medium-speed medium price main memory

C

Which of following is true about cache in the memory hierarchy?  
a. Small amount of fast expensive memory  
b. Some medium-speed medium price  
c. Gigabytes of slow cheap memory  
d. None of the other choices

A

Which of following is true about disk storage in the memory hierarchy?  
a. Small amount of fast expensive memory  
b. Some medium-speed medium price  
c. Gigabytes of slow cheap memory  
d. None of the other choices

C

Which of following is true about main memory in the memory hierarchy?  
a. Small amount of fast expensive memory  
b. Some medium-speed medium price  
c. Gigabytes of slow cheap memory  
d. None of the other choices

b

182/ As one proceeds down the memory hierarchy (from inboard memory to offline storage), the following conditions apply:  
[A]Increasing capacity  
[B]Decreasing cost per bit  
[C]All of the other choices  
[D]Increasing access time

C