

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

2.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

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?

A. 0

B. 1

C. 2

D. 3

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?

- A.0
- B. 1
- C. 2
- D. 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

6.If i-node contains 10 direct addresses and all disk blocks are 1024 KB, what is largest possible file

A. 10 MB

B. 10 GB

C. 1GB

D. None of the other choices

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

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

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

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

D. None of the other choices

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

A. 1

B. 2

C. 3

D. 4

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

A. Memory Manager scans along the list of segments until it finds a hole that is big enough.

B. Memory Manager starting searching the list of segments from the place where it left off last time.

C. Memory Manager searches the entire list of segments from beginning to end and take smallest hole that is

D. None of the other choices

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

A. Checking the value

B. Changing the value

C. Possibly going to sleep

D. 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?

A 4-KB page

B. 2-KB page

C. 1-KB page

D. 5128 page

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

A. APPEND

B. UPDATE

C. REWRITE

D. MODIFY

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

- A. Order resources numerically
- B. Request all resources initially
- C. Spool everything
- D. Take resources away

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

- A. Normal exit (voluntary)
- B. Error exit (voluntary)
- C. Fatal error (involuntary)
- D. Killed by another process (involuntary)

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

- A. The outermost part
- B. The innermost part
- C. Immediately following the master file directory
- D. Stored at the beginning of the volume

16. Working set model is used for:

- A. Finding the minimum number of frames necessary for a job so that jobs can be run without "thrashing"
- B. Finding the average number of frames a job will need to run smoothly
- C. Determining whether page replacement is needed
- D. All of the other choices

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

- A. In a timesharing system, multiple users can access the system simultaneously
- B. In a multiprogramming system, one user can run several processes simultaneously
- C. All timesharing systems are multiprogramming systems

D. 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.

A. Procedures

B. Policies

C. Protocols

D. Rules

19. The language of the CPU is known as its

A. Instruction set

B. Register set

C. Control unit set

D. None of the other choices

20. Which of the following synchronization mechanisms does not rely on busy-waiting?

A. Lock variables

B. Strict alternation

C. Peterson's algorithm

D. Semaphores

21. Which deadlock condition does "Ordering resources numerically" attack?

A. Mutual exclusion

B. Hold and wait

C. No preemption

D. Circular-wait condition

22. One of the primary disadvantages of contiguous storage is that _____

A. It is hard to implement and manage

B. It is difficult to find information in files

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

D. It is an inefficient use of space

23. _____ 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.

A. Mutual-exclusion condition

B. Circular-wait condition

C. Hold and wait condition

D. No preemption condition-----

24. Which of the following statements about Random Access memory (RAM) is correct?

A. Is typically faster than cache memory

swer)

B. Is volatile

C. Can only be read sequentially

D. Stores all the files on the computer

25. 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

A 7

B. 20

C. 22

D. 24

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

A. OPEN

B. CLOSE

C. SEEK

D. DELETE

27. Which of the 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

28. Which of the following file structure is widely used on large mainframe computers?

A. Byte sequence

B. Record sequence

C. Ring

D. Tree

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

A. Data rate

B. Data representation

C. Error conditions

D. All of the other choices

30. 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

31. What is true about preemptable resources?

- A. Will cause the process to fail if taken away
- B. Can be taken away from a process with no ill effects
- C. Can share among processes

D. None of the other choices

32. _____ devices are assigned to only one job at a time.

A. Dedicated

B. Shared

C. Virtual

D. Static

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

A. Mutual-exclusion condition

B. Circular-wait condition

C. Hold and wait condition

D. Preemption condition

34. Which of the following is correct about the advantages of layered system?

A. Easier to extend

B. Easier to debug from lower to upper layer

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

D. None of the other choices

35. An operating system

A. Manages hardware resources in a computer system

B. 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

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

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

37. The Mach model of Page fault handling with an external pager includes

- A. A low-level MMU handler
 - B. A page fault handler that is part of the kernel
 - C. An external pager running in user space
 - D. All of the other choices
- ices

38. 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:

- A. Free block
- B. MBR
- C. Boot block
- D. Superblock

39. Rearrange the layers in I/O software starting at the bottom

- 1 .User-level I/O software
- 2 .Device drivers
3. Interrupt handlers
4. Hardware
5. Device-independent OS software

- A. 12345
- B. 54321

C. 43251

D. 15234

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

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

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

C. Requires a disk map in memory

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

41. The period between interruption in the Clock of the computer is called:

A. Clock ticks

B. Clock time interval

C. Clock time counter

D. None of the other choices

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

A. Separating I/O and memory space

B. Memory-mapped I/O

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

D. All of the other choices

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

A. No two processes simultaneously in critical region

B. No assumptions made about speeds or numbers of CPUs

C. No process running outside its critical region may block another process

D. No process must wait forever to enter its critical region

E. All of the other choices

44. Assuming that it takes 10 nsec to copy a byte, how much time, does it take to completely rewrite the screen of

- A. 10 micro-sec
- B. 20 micro-sec
- C. 30 micro-sec
- D. 40 micro-sec

45. 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	4050

- A. 7600
- B. 10250
- C. 6785
- D. 4075

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

- A. Field
- B. Record group
- C. File
- D. Directory

47. How many ways is Thread implemented?

- A. 1
- B. 2
- C. 3

D. None of the other choices

48. Which of the following instructions should be allowed in user mode?

answer)

A. Disable all interrupts

B. Read the time-of-day clock

C. Set the time-of-day clock

D. Change the memory map

Which of the following is correct about Shortest Job First scheduling algorithm?

A. Avoid Starvation

B. Minimize average waiting time

C. Avoid Starvation and Minimize average waiting time

D. None of the other choices

49. Which of the following statements about the CPU handling interrupts is incorrect?

A. The processor ceases to execute the current sequence of instructions

B. The hardware saves the old PC location

C. The CPU branches to a new instruction sequence

D. None of the other choices

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

A. TinyOS

B. MS-DOS

C. Symbian OS and Palm OS

D. 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

B. Superscalar

C. Multicore

D. None of the other choices

53. Which method is used to prevent the communication deadlock?

A. Handling alarm

answer)

B. Acknowledge signal

C. Timeouts

D. All of the other choices

54. 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.

A. There is no deadlock

B. Event 4 caused deadlock

C. Event 5 caused deadlock.

D. Event 6 caused deadlock

55. Which of the following is not a step in the boot process?

A. Configuration and customization settings are checked.

B. The BIOS is activated by powering on the CPU.

C. The antivirus program checks all files for viruses.

D. The operating system is loaded into RAM.

56. A directory in UNIX/Linux consists of:

- A. I-node number and file name
- B. File name, file size, location of the file on disk
- C. File name, file size, location of the file on disk, date created, owner ID
- D. None of the other choices

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

- A. A device driver is a set of device-specific code for controlling the I/O device attached to a computer
- B. Most operating systems expect device drivers to be part of the kernel
- C. In the I/O software architecture, the device drivers layer lie right above the hardware, and below the interrupt handlers layer
- D. 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
- B. 50,000
- C. 5,000,000
- D. 50,000,000

59. Which of the following process state transitions is legal?

- A. Ready-> Blocked (waiting)
- B. Running->ready
- C. Blocked (waiting) -> running
- D. None of the other choices

60. Which solution is used to solve the "missing block" problem for file system consistency?

- A. The file system checker rebuilds the free list
- B. The file system checker adds the missing blocks to the free list
- C. The file system checker allocates the free block, then copies the duplicate block into it
- D. None of the other choices

A disk queue with requests for I/O blocks on cylinders in orders: 10, 22, 20, 2, 40, 6, 38. Ass 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

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

- A. The network connection for the printer overflows with too many requests to use the printer.
- B. Too many users attempt to access the printer at the same time.
- C. The buffer fills up with too many print jobs and the printer cannot decide which one to print.
- D. 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.

Which of the following interview questions is a behavioral question?

- A. What does teamwork mean to you?
- B. Give me an example of a situation in which you
- C. What is your greatest weakness?
- D. Do you like to work alone or with other people?

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

- A. Free block
- B. Boot block
- C. MBR
- D. Super block

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

- A. Process execution
- B. Process creation
- C. Process termination time

D. Page fault time

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

- A. To exhibit cooperation
- B. None of the other choices
- C. In the critical region of the program
- D. To perform message passing

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

- A. Programmable
- B. Volatile
- C. Can be erased and rewritten
- D. None of the other choices

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

- A. No two processes simultaneously in critical region
- B. No assumptions made about speeds or numbers of CPUs
- C. No process running outside its critical region may block another process
- D. No process must wait forever to enter its critical region

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

- A. preempt a resource
- B. kills one of the processes
- C. locks one of the processes
- D. Rollback

Working set model is used for:

- A. Finding the minimum number of frames necessary for a job so that jobs can be run without "thrashing"
- B. Finding the average number of frames a job will need to run smoothly

- C. Determining whether page replacement is needed
- D. All of the other choices

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

Many computer users and some operating systems call subdirectories

- A. Volumes
- B. Databases
- C. Files
- D. Folders

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

- A. 4
- B. 3
- C. 1
- D. 2

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?

- A. The event is some mouse clicks
- B. None of the other choices
- C. The event is release of a currently held resource
- D. The event is press some key on keyboard

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

- A. Modified bit
- B. Present/absent bit
- C. Referenced bit
- D. Caching disabled

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

- A. Event 5 caused deadlock.
- B. There is no deadlock
- C. Event 6 caused deadlock.
- D. Event 4 caused deadlock

Which of the following statements about the CPU handling interrupts is incorrect?

- A. The hardware saves the old PC location
- B. The processor ceases to execute the current sequence of instructions
- C. None of the other choices
- D. The CPU branches to a new instruction sequence

A simplest way to break a deadlock is to

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- B. locks one of the processes
- C. Rollback
- D. preempt a resource

Devices are assigned to only one job at a time.

- A. Shared
- B. Virtual
- C. Static
- D. Dedicated

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
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- C. The event is press some key on keyboard
- D. The event is release of a currently held

What is the "sequential processes" concept?

- A. There are both many CPU and many PC
- B. No concurrency inside a process; everything happens sequentially
- C. None of the other choices
- D. All process is executed in concurrency

Which of the following is not true about process hierarchy?

- A. A process may have more than one parent
- B. In Unix, a process and all its children and further descendants together form a process group
- C. A process creates child process. The child process can itself create more processes, forming a process hierarchy
- D. Window has no concept of a process hierarchy

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

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- B. Too many users attempt to access the printer at the same time.
- C. The buffer fills up with too many print jobs and the printer cannot decide which one to print.
- D. 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.

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

- A. Possibly going to sleep
- B. All of the other choices
- C. Changing the value
- D. Checking the value

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

- A. LINK
- B. CREATE
- C. OPEN
- D. SEEK

Which of the following file structure is widely used on large mainframe computers?

- A. Tree
- B. Ring
- C. Record sequence
- D. Byte sequence

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

- A. <physical address, offset>
- B. <process, offset>
- C. <virtual address, offset>
- D. <segment-number, offset>

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?

- A. 8 MB
- B. 2 MB
- C. 1 MB
- D. 4 MB

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

- A. 100
- B. 60
- C. 80
- D. 20

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

- A. <physical address, offset>
- B. <process, offset>
- C. <virtual address, offset>
- D. <segment-number, offset>

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

- A. 31
- B. 2
- C. 1
- D. 4

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

devices are assigned to only one job at a time.

- A. Shared
- B. Virtual
- C. Static
- D. Dedicated

An example of a I/O block devices is:

- A. CD ROM
- B. All of the other choices
- C. Printer
- D. Modem

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

- A. If process is locked in Critical Section: System Halt
- B. Don't ensure Mutual Exclusion for the system with N CPUs
- C. All of the other choices
- D. Permit process to use command privileges: Danger!

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?

- A. 2^{20} pages
- B. 2^{21} pages
- C. 2^{23} pages
- D. 2^{22} pages

A system with 32 bit virtual address. If the page size is 16 KB and each table entry occupies the size of the page table

- A. 8 MB
- B. 2 MB
- C. 4 MB
- D. 1 MB

Which of the following file structure is widely used on large mainframe computers?

- A. Record sequence
- B. Ring
- C. Byte sequence
- D. Tree

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.

- A. 36 sectors
- B. 12 sectors
- C. 24 sectors
- D. 18 sectors

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

- A. Functions
- B. Threads
- C. Processes
- D. System calls

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

- A. Available resource vector
- B. Request matrix
- C. Existing resource vector
- D. Current allocation matrix

The____policy is based on the theory that the best page to remove is the one that has been in memory the longest

- A. LRU
- B. LIFO
- C. NRU
- D. FIFO

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

- A. Multithreading
- B. Virtual memory
- C. Segmenting
- D. Shared memory

Which deadlock condition does "Take resources away" attack?

- A. Circular-wait condition
- B. Mutual exclusion
- C. Hold and wait
- D. No preemption

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

- A. None of the other choices
- B. To perform message passing
- C. To exhibit cooperation
- D. In the critical region of the program

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

- A. Symbolic links can point to files in the network
- B. Hard links can point to files on other machines
- C. Hard links do not require extra disk space
- D. Symbolic links need space to store the path name and considerable number of extra disk accesses

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?

- A. 2^{22} pages
- B. 2^{23} pages
- C. 2^{21} pages
- D. 2^{20} pages

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

- A. Changing the value
- B. Possibly going to sleep
- C. All of the other choices
- D. Checking the value

- 1) One of the primary disadvantages of contiguous storage is that
- A. It is hard to implement and manage
 - B. It is difficult to find information in files
 - C. File can't be expanded unless there is empty space available immediately following it
 - D. It is an inefficient use of space
- 2) What is the correct approach with the "No preemption condition" to prevent Deadlock?
- A. Order resources numerically
 - B. Request all resources initially
 - C. Spool everything
 - D. Take resources away
- 3) As one proceeds down the memory hierarchy (from inboard memory to offline storage), which of the following conditions is correct
- A. Decreasing cost per bit
 - B. Decreasing capacity
 - C. Decreasing access time
 - D. None of the other choices
- 4) Which of the events that causes the processes to be created, when an operation system is booted?
- A. System initialization
 - B. Execution of a process creation system call
 - C. User request to create a new process
 - D. Initiation of a batch job

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	Hole Size
4075	105
5225	5
6785	600
7560	20

7600

205

10250

4050

- A. 7600
- B. 10250
- C. 6785
- D. 4075

6) 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”?

- A. Interrupt stealing
- B. Cycle sneaking
- C. Cycle stealing
- D. All of the others.

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

- A. 1KB
- B. 2KB
- C. 4KB
- D. 8KB

8) Which of the following instructions should be allowed in user mode?

- A. Disable all interrupts
- B. Read the time-of-day clock
- C. Set the time-of-day clock
- D. Change the memory map

9) Which are allocation methods of disk blocks for files?

- A. Contiguous allocation
- B. Linked allocation

- C. Indexed allocation
- D. All of the other choices

10) Which classes of I/O devices that Clock belong to?

- A. Stream devices
- B. Block devices
- C. Character devices
- D. None of the other choices

11) Which of these statements about the Inverted Page Table are true?

- A. An entry contains the pair (process, virtual page) mapped into the corresponding page frame
- B. An entry contains the pair (process, offset) mapped into the corresponding page frame
- C. An entry contains the pair (segment, virtual page) mapped into the corresponding page frame
- D. An entry contains the pair (segment, offset) mapped into the corresponding page frame

12) What is not a field in the process table that relates memory management?

- A. Pointer to text segment info
- B. Pointer to data segment info
- C. Pointer to stack segment info
- D. Pointer to program segment info

13) At which level in Protection Rings on the Pentium the Shared libraries reside

- A. 0
- B. 1
- C. 2
- D. 3

14) The second-chance page-replacement algorithm

- A. 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
- B. Searches through a circular list of pages and replaces the first page it encounters that has the referenced bit turned off
- C. Relies on a modified bit to determine which page to replace
- D. None of the other choices

15) What is the characteristic of the fourth generation of operating system?

- A. Vacuum tubes, plug boards
- B. Transistors, batch systems
- C. ICs and multiprogramming
- D. Personal computers, single user, multitasking

16) 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:

- A. Free block
- B. MBR
- C. Boot block
- D. Superblock

17) Which of the following statement is a task of main memory management of OS?

- A. Keep track of which parts of memory are currently being used and by whom.
- B. Decide which processes to load when memory space becomes available.
- C. Allocate and deallocate memory space as needed
- D. All of the other choices

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

- A. Data rate

- B. Data representation
- C. Error conditions
- D. All of the other choices

19) ____ is the act of allowing only one process to have access to a dedicated resource.

- A. Mutual-exclusion condition
- B. Circular-wait condition
- C. Hold and wait condition
- D. No preemption condition

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

- A. Deadlock ignorance
- B. Deadlock detection
- C. Deadlock avoidance
- D. Deadlock prevention

21) The Mach model of Page fault handling with an external pager includes

- A. A low-level MMU handler
- B. A page fault handler that is part of the kernel
- C. An external pager running in user space
- D. All of the other choices

22) Which of the following process state transitions is illegal?

- A. Running -> Blocked (waiting)
- B. Running -> ready
- C. Blocked (waiting) -> ready
- D. Ready -> Blocked (waiting)

23) Which of the following is true about the data rate for disk management?

- A. The larger the block size is the faster the data rate is
- B. The larger the block size is the lower the data rate is
- C. The larger the block size is lesser the disk space is
- D. None of the other choices

24) Which is an advantage of implementing threads in the kernel?

- A. Is good for multiprocessor architecture
- B. If one thread is blocked does not cause the other thread to be blocked
- C. Is good for multiprocessor architecture and if one thread is blocked does not cause the other thread to be blocked
- D. None of the other choices

25) 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

- A. 7
- B. 20
- C. 22
- D. 24

26) _____allocation allows files to use any storage space available on the disk.

- A. Contiguous storage
- B. Noncontiguous storage
- C. Fragmented storage
- D. Add-on storage

27) What is a “stripping” in RAID?

- A. Distributing data over multiple drives
- B. Take away possessions from someone
- C. Get undressed
- D. All of the other choices

28) 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
- B. 60
- C. 58
- D. None of the others

29) Which of the following statements about X window is correct?

- A. Is high portable for nearly all UNIX and LINUX system
- B. Is highly event driven. Event flows from the workstation to the program
- C. 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.
- D. All of the other choices

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

- A. P (Present/absent bit)
- B. DPL (Privilege level bits)
- C. S (System bits)
- D. TYPE (Segment type and protection bits)

31) What is the main characteristic of real-time operating system?

- A. Multiple CPU
- B. Time-sharing

- C. Time is key parameter
- D. Many I/O devices

32) A simplest way to break a deadlock is to

- A. preempt a resource
- B. Rollback
- C. kills one of the processes
- D. locks one of the processes

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

- A. Interrupt signal
- B. Halt signal
- C. Handler signal
- D. None of the other choices

34) 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

- A. Procedures
- B. Policies
- C. Protocols
- D. Rules

35) Which of these statements about the algorithm "Worst fit" is true?

- A. Memory Manager scans along the list of segments until it finds a hole that is big enough.
- B. Memory Manager starting searching the list of segments from the place where it left off last time
- C. Memory Manager searches the entire list of segments from beginning to end and take smallest hole that is adequate.

D. None of the other choices

36) The absolute pathname of a file in Linux is with respect to the

A. Home directory

B. Login directory

C. Root directory on the system

D. All of the other choices

37) 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?

A. 2^{20} pages

B. 2^{21} pages

C. 2^{22} pages

D. 2^{23} pages

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

A. Existing resource vector

B. Available resource vector

C. Current allocation matrix

D. Request matrix

39) 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.

A. 17 minutes

B. 18 minutes

C. 18.8 minutes

D. 12,8 minutes

40) In a directed graph used to model deadlock, resources are represented using

- A. Squares.
- B. Circular
- C. Ellipse
- D. Rectangle

41) 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?

- A. The event is release of a currently held resource
- B. The event is press some key on keyboard
- C. The event is some mouse click

D. None of the other choices

42) A table in main memory storing linked list of allocation of disk blocks is called:

- A. Disk allocation table
- B. Linked list table
- C. File list table
- D. File allocation table

43) Which of the following information bits in the entry of page table is false?

- A. Present/absent bit
- B. Mode bit
- C. Protection bit
- D. Modified bit

44) Of the three components of access time in a disk, _____ is the longest.

- A. Seek time
- B. Search time
- C. Transfer time
- D. Delay time

45) Which of the following is not a CPU scheduling criterion?

- A. CPU utilization
- B. Burst time
- C. Throughput
- D. Response time

46) The _____ is the essential component of the operating system that remains in RAM when your computer is powered on.

- A. kernel
- B. core
- C. system file
- D. Registry

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

- A. Only one process at a time can be allowed into a critical section
- B. A process remains in its critical region for a finite time only
- C. No assumption can be made about relative process speeds
- D. All of the other choices

48) 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)?

- A. 4msec, 40 msec, 20 sec
- B. 2 msec, 20 msec, 10 sec
- C. 1 msec, 10 msec, 10 sec
- D. 2msec, 20 msec, 40 sec

49) 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.

50) 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

51) What is true about non-preemptable resources?

- A. Will cause the process to fail if taken away
- B. Can be taken away from a process with no ill effects
- C. Can share among processes
- D. None of the other choices

1.The actual location in main memory is called a(n):

- A. Relative address
- B. Logical address
- C. Absolute address
- D. None of the other choices

2.How large is the block size, if the maximum partition size is 256 MB and FAT type is FAT-12

- A. 1 KB
- B. 2 KB
- C. 4 KB
- D. 8 KB

3.The first-come, first-served (FCFS) algorithm is fine for most,____ systems

- A. Interactive
- B. Batch
- C. Real time
- D. Multiuser

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

- A. VO device
- B. Programmed VO
- C. DMA
- D. None of the other choices

5.A(n)____is provided to make system calls from some programming languages

- A. procedure library
- B. operator
- C. pointer

D. None of the other choices

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

A. Win32

B. Linux

C. Unix

D. None of the other choices

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

A. CPU utilization

B. Throughput

C. Turnaround time

D. Response time

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

A. Lock variables

B. Message passing

C. Peterson's algorithm

D. Semaphores

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

A. OPEN

B. CLOSE

C. SEEK

D. RENAME

10. Which deadlock condition does "Take resources away" attack?

A. Mutual exclusion

B. Hold and wait

C. No preemption

D. Circular-wait condition

11. 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. 1461
- B. 60
- C. 58
- D. None of the others

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

- A. 14 bits
- B. 15 bits
- C. 16 bits
- D. 17 bits

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

- A. Instruction Register (IR)
- B. Program Counter (PC)
- C. Program Status Word (PSW)
- D. None of the other choices

14. 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_____?

- A. Lagging
- B. Bumping
- C. Aging
- D. Accelerated priority

15. 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

16. An example of the key differences that can exist across (and even in) types of IO devices is

- A. Data rate
- B. Data representation
- C. Error conditions
- D. All of the other choices

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

- A. The larger the block size is the lower the data rate is
- B. The larger the block size is the worse the disk space utilization is
- C. The larger the block size is lesser the disk space is
- D. None of the other choices

18. 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

19. Of the three components of access time in a disk, _____ is the longest

- A. Seek time
- B. Search time
- C. Transfer time
- D. Delay time

20. What is the way to recover from a deadlock:

- A. Preempt a resource
- B. Rollback
- C. Killing processes
- D. All of the other choices

21. 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.

- A. There is no deadlock
- B. Event 4 caused deadlock
- C. Event 5 caused deadlock
- D. Event 6 caused deadlock

22. 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

23. 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

- A. 20
- B. 60
- C. 80
- D. 100

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

- A. Linked List Allocation
- B. Contiguous Allocation
- C. File Allocation Table
- D. i-node

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

- A. Order resources numerically
- B. Request all resources initially
- C. Spool everything

D. Take resources away

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

A. Since the control registers of devices are mapped into the memory space, device drivers

B. Programs can use 1 instructions to test whether the device is ready

C. Caching a device control register would be disastrous

D. None of the other choices.

27. 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
1	110	270	1	0
3	120	285	1	1

Which page will FIFO replace?

A. 0

B. 1

C. 2

D. 3

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

A Mutual-exclusion condition

B. Circular-wait condition

C. Hold and wait condition

D. Preemption condition

29. 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.

A. 17 minutes

B. 18 minutes

C. 18.8 minutes

D. 12,8 minutes

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

their

A. Normal exit (voluntary)

B. Error exit (voluntary)

C. Fatal error (involuntary)

D. Killed by another process (involuntary)

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

A. Memory Management with Bit Maps

B. Memory Management with Linked Lists

C. Both Memory Management with Bit Maps and Memory Management with Linked Lists

D. None of the other choices

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

A. Create, manipulate and delete File/Directory

B. Mapping files onto secondary storage

C. File backup on stable (nonvolatile) storage media.

D. Allocate and deallocate memory space as needed

33. A well-known operating system for sensor node is

A. TinyOS

B. MS-DOS

C. Personal Operating System

D. e-Cos

34. 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

- B. 73
- C. 20
- D. 5

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

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

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

Process Allocated Matrix Request Matrix

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

Deadlocked processes are:

- A. P1, P2
- B. P1, P3
- C. P2, P3
- D. P1, P4

37. 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

- A. 7600
- B. 10250
- C. 6785
- D. 4075

38. VMware Workstation is:

- A. Type 1 Hypervisor
- B. Type 2 Hypervisor
- C. Host Operating system
- D. Guest Operating system

39. How many level of scheduling are used in computer

- A. 1
- B. 2
- C. 3
- D. 4

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

- A. Disable all interrupts
- B. Change the memory map
- C. Set the time-of-day clock
- D. All of the other choices

41. The Joliet Extensions provide_____

- A. Long file name supported Unicode character
- B. Directory nesting deeper than 8 levels
- C. Directory names with extensions
- D. All of the other choices

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

- A. Memory Manager scans along the list of segments until it finds a hole that is big enough.

B. Memory Manager starting searching the list of segments from the place where it left off last time.

C. Memory Manager searches the entire list of segments from beginning to end and take smallest hole that is adequate.

D. None of the other choices

43. Which is special file?

A character special file

B. block special file

C. Both character special file and block special file

D. None of the other choices

44. File Structure can be

A. Byte sequence

B. Record sequence

C. Tree

D. All of the other choices

45. ____are special files with listings of filenames and their attributes.

A Databases

B. Directories

C. Programs

D. Data files

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

A Contiguous block allocation

B. Linked list block allocation

C. Sparse block allocation

D. Indexed block allocation

47. What is not a main function of an operating system?

A. Provide the users with an extended (virtual) machine

B. Manage the I/O devices

C. Provide user interfaces

D. Support virtual memory

48. 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

49. In modern printing systems, a disk accepts output from several users, Deadlock occurs when_____.

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

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

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

D. 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.

50. 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.

A. D6

B. B3

C. C5

D. None of the others

TEST 5

1. (Choose 1 answer)

Shell script is

- A. A directory containing a list of system files
- B. A file containing a list of system calls
- C. A file containing a list of shell commands are executed in order
- D. A directory containing a list of shell commands

2. (Choose 1 answer)

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

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

3. (Choose 1 answer)

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

- A. When IO devices transfer data to memory.
- B. When IO devices are attached to system using individual buses.
- C. When memory and IO devices are connected to system using common buses.
- D. When memory transfers data to an IO device.

4. (Choose 1 answer)

What is the purpose of CPU scheduling algorithms?

- A. Put to sleep and wake up processes in an efficient manner
- B. Allocate memory to the processes in a fair and efficient way
- C. Pick one of the ready processes to run next
- D. None of the others

5. (Choose 1 answer)

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

- A. Process register
- B. Process table
- C. Process unit
- D. Program counter

6. (Choose 1 answer)

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

- A. MBR
- B. Boot block
- C. Super block
- D. Free block

7. (Choose 1 answer)

The mounted file system is

- A. creating of a file system
- B. removing portion of the file system into a directory structure
- C. deleting a file system
- D. attaching portion of the file system into a directory structure

8. (Choose 1 answer)

Which are allocation methods of disk blocks for files?

- A. Contiguous allocation
- B. All of the others
- C. Indexed allocation
- D. Linked allocation

9. (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:

- A. OPTIMAL < FIFO < LRU
- B. OPTIMAL = LRU
- C. OPTIMAL < LRU < FIFO
- D. OPTIMAL = FIFO

10. (Choose 1 answer)

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

- A. The process is selected by the scheduler
- B. The process is suspended by the scheduler
- C. The process waits for some events to occur
- D. The awaited event of process occurs

11. (Choose 1 answer)

PCB (Process Control Block) does NOT contain _____

- A. Open files list
- B. Program counter
- C. Memory limits
- D. Bootstrap

12. (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?

- A. 6
- B. 5
- C. 7

D. 8

13. (Choose 1 answer)

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

- A. Blocked, Ready, Terminated
- B. New, Ready, Blocked, Terminated
- C. Blocked, Terminated
- D. New, Ready, Blocked

14. (Choose 1 answer)

Which paging replacement algorithm is only used in benchmark?

- A. FIFO
- B. Aging
- C. Optimal
- D. WSClock

15. (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

16. (Choose 1 answer)

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

- A. It should be device independent
- B. It should be device dependent
- C. It should support special devices in advance
- D. It should interact with the device drivers and makes hardware alive

17. (Choose 1 answer)

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

- A. Average CPU utilization; Average response time
- B. Average waiting time; Average turnaround time
- C. CPU utilization; Response time
- D. Waiting time; Turnaround time

18. (Choose 1 answer)

The main classes of I/O devices are:

- A. Block devices
- B. Block devices and Character devices
- C. Character devices
- D. Stream devices

19. (Choose 1 answer)

Which is a Real time operating system?

- A. RTLinux

- B. Windows NT
- C. Windows Server Enterprise
- D. Kali Linux

20. (Choose 1 answer)

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

- A. Preemptable resources can be resolved deadlocks by reallocating resources from one process to another.
- B. Only one process is allowed to access network interface card at a time.
- C. Only one process is allowed to use CPU at a time.
- D. Only one process is allowed to access a file at a time.

21. (Choose 1 answer)

Page fault occurs when _____

- A. a page is corrupted
- B. a requested page is in CPU
- C. an exception is thrown
- D. a requested page is not in memory

22. (Choose 1 answer)

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

- A. Fatal error (involuntary)
- B. Normal exit (voluntary)
- C. Error exit (voluntary)
- D. Killed by another process (involuntary)

23. (Choose 1 answer)

Which process state means a process is waiting for execute?

- A. Execute
- B. Complete

- C. Terminate
- D. Ready

24. (Choose 1 answer)

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

- A. Hard link
- B. Both hard link and symbolic link
- C. Soft link
- D. Symbolic link

25. (Choose 1 answer)

The result of command "ls -lid ./" is:

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

What is the number "4096"?

- A. The i-node of the current directory
- B. The size in bytes of the current file
- C. The i-node of the current file
- D. The size in bytes of the current directory

26. (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?

- A. Sector
- B. Frame
- C. Page
- D. Segment

27. (Choose 1 answer)

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

- A. File content blocks need NOT to be contiguous.
- B. Search operation has higher performance
- C. File content blocks must be contiguous.
- D. Each block contains a reference to next block.

28. (Choose 1 answer)

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

- A. De-allocating all resources
- B. The process is chosen by scheduler
- C. Time-out (time slice expired)
- D. IO wait

29. (Choose 1 answer)

Which of the following is an Operating System component?

- A. Process Management
- B. Space Management
- C. Speed Management
- D. Time Management

30. (Choose 1 answer)

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

- A. Memory Management with Bit Maps
- B. Memory Management with Linked Lists
- C. Both Memory Management with Bit Maps and Memory Management with Linked Lists
- D. Memory Management with Graphs

31. (Choose 1 answer)

The four main structural elements of a computer system are:

- A. Processor. Registers, I/O Modules, Main Memory
- B. None of the others
- C. Processor, Registers, Main Memory. System Bus
- D. Processor, Main Memory. I/O Modules, System Bus

32. (Choose 1 answer)

Which statement is incorrect about system calls?

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

33. (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?

- A. 653
- B. 205
- C. 229
- D. 302

34. (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.

- A. 8
- B. 4
- C. 6
- D. 2

35. (Choose 1 answer)

Which of the following is not a CPU scheduling criterion?

- A. Response time
- B. CPU utilization
- C. Arrival Time
- D. Throughput

38. (Choose 1 answer)

Which of the following is invalid deadlock prevention scheme?

- A. Never request a resource after releasing any resource
- B. Release all resources before requesting a new resource
- C. Request and all required resources be allocated before execution
- D. Number the resources uniquely and never request a lower numbered resource than the last one requested.

39. (Choose 1 answer)

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

- A. Interrupt-driven I/O
- B. Isolated I/O
- C. Direct Memory Access (DMA)
- D. Programmed I/O

40. (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:

- A. 97%
- B. 99%
- C. 72.75%

D. 97.53%

41. (Choose 1 answer)

Parallel processing is also called ____.

- A. shared processing
- B. divided processing
- C. multiprocessing**
- D. uniprocessing

44. (Choose 1 answer)

A critical section is a program segment _____

- A. where shared resources are accessed**
- B. which avoids deadlocks
- C. which should run in a certain specified amount of time
- D. which must be enclosed by a pair of semaphore operations. P and V

45. (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.**

- A. Event 6 caused deadlock.
- B. Event 4 caused deadlock.
- C. There is no deadlock.**
- D. Event 5 caused deadlock.

46. (Choose 1 answer)

LRU replaces the page that has spent the _____.

- A. shortest time in memory without being referenced
- B. shortest time in memory
- C. longest time in memory
- D. longest time in memory without being referenced

47. (Choose 1 answer)

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

- A. Next fit
- B. Best fit
- C. Worst fit
- D. First fit

48. (Choose 1 answer)

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

- A. <process, offset>
- B. <segment-number, offset>
- C. <virtual address, offset>
- D. <physical address, offset>

1. 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?

- A. OPEN
- B. CLOSE
- C. RENAME
- D. SEEK

2. What is not the way to recover from a deadlock?

- A. Preempt a resource
- C. Killing processes
- B. Rollback
- D. Locks one of the processes

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

- A. Program Status Word (PSW)
- B. Instruction Register (IR)
- C. None of the other choices
- D. Program Counter (PC)

4. Which deadlock condition does "Take resources away" attack?

- A. Hold and wait
- B. No preemption
- C. Circular-wait condition
- D. Mutual exclusion

5. The task of subdividing memory between the OS and processes is performed automatically called:

- A. Protection
- B. Relocation
- C. All of the other choices
- D. Memory Management

6. 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

- A. 20 minutes
- B. 18.8 minutes
- C. 18 minutes
- D. 17 minutes

7. The methods determine where page is on the disk when it is paged out is

- A. None of the other choices
- B. Both Paging to a static swap area and Backing up pages dynamically
- C. Backing up pages dynamically
- D. Paging to a static swap area

8. 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?

- A. The event is release of a currently held resource
- B. The event is press some key on keyboard
- C. None of the other choices
- D. The event is some mouse click

9. Which of the following is not special file?

- A. Character special file
- B. None of the other choices
- C. Stream special file
- D. Block special file

10. An arrival message causes the system to create a new thread to handle this message. This new thread is call_____

- A. Distributed
- B. Upcall
- C. Activator
- D. Pop-up

11. Which solutions are used to solve the shared libraries?

- A. Relocation on the fly and position-independent code
- B. Static reallocation and position-independent code
- C. None of the other choices
- D. Position-independent code

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

- A. 8 KB
- B. 4 KB
- C. 2 KB
- D. 1KB

13. Assume the following events and actions take place. The following statement, _____ is true, Event 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.

- A. Event 4 caused deadlock
- B. Event 5 caused deadlock.
- C. There is no deadlock
- D. Event 6 caused deadlock.

14. The _____ is the essential component of the operating system that remains in RAM when your computer is powered on

- A. registry
- B. system file
- C. kernel
- D. core

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

- A. Unix
- B. Linux
- C. Win32
- D. None of the other choices

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

- A. Too many users attempt to access the printer at the same time.
- B. The network connection for the printer overflows with too many requests to use the printer.
- C. The buffer fills up with too many print jobs and the printer cannot decide which one to print.
- D. 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.

17. What is a "stripping" in RAID?

- A. Take away possessions from someone
- B. All of the other choices
- C. Distributing data over multiple drives
- D. Get undressed

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

A. Running → Blocked (waiting)

B. Ready → running

C. Running ready

D. Blocked (waiting) → ready

19. 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 :

- A. P1, P2
- B. P1, P3
- C. P1, P4**
- D. P2, P3

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

A. exit, ExitProcess

B. ExitProcess; exit

C. terminate; ExitProcess

D. ExitProcess; terminate

21. File Structure can be:

A. Byte sequence

B. Record sequence

C. Tree

D. All of the other choices

22. Which of these statements about the algorithm "Worst fit" is true?

A. Memory Manager scans along the list of segments until it finds a hole that is big enough.

B. None of the other choices

C. Memory Manager searches the entire list of segments from beginning to end and take smallest hole that is adequate.

D. Memory Manager starting searching the list of segments from the place where it left off last time.

23. What is the main characteristic of real-time operating system?

A Many I/O devices

B. Multiple CPU

C. Time-sharing

D. Time is key parameter

24. 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. 9.0

B. 12.5

C. 5.5

D. 10.5

25. The first-come, first-served (FCFS) algorithm is fine for most _____ systems.

- A. Real time
- B. Interactive
- C. Batch
- D. Multiuser

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

- A. 16 bits
- B. 15 bits
- C. 17 bits
- D. 14 bits

27. 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 _____ ?

- A. Lagging
- B. Accelerated priority
- C. Aging
- D. Bumping

28. How many level of scheduling are used in computer

- A. 1
- B. 4
- C. 3
- D. 2

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

- A. Page
- B. Frame

- C. Block
- D. Segment

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

- A. Is electronic component of device
- B. Can handle two, four, or even eight identical device
- C. Is also called adapter
- D. Is software component of device

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

- A. Above the hardware and under the user interface program
- B. None of the other choices
- C. Between the user interface program and the application Program
- D. In user space

32. 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

A. 22

B. 24

C. 20

D. 7

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

A. None of the other choices

B. A TLB miss implies a disk operation will follow

C. Each entry of a TLB contains the information about one page. including the virtual page number and the corresponding page frame

D. A TLB is sometimes known as an associative memory

34. Increasing file system performance is implemented by _____ .

A. Buffer cache

B. All of the other choices

C. Block Read Ahead

D. Defragmenting Disks

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. 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.

A. 10.8 minutes

B. 16.8 minutes

C. 54 minutes

D. 12,8 minutes

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

A. 50%

B. 75%

C. 25%

D. 100%

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

A. Throughput

B. Response time

C. CPU utilization

D. Turnaround time

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

- A. Sparse block allocation
- B. Indexed block allocation
- C. Linked list block allocation
- D. Contiguous block allocation

39. The aspect of disk performance that represents the time it takes to position the head at the desired track is known as

- A. None of the other choices
- B. Rotational delay
- C. Access time
- D. Seek time

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

- A. Next fit
- B. Worst fit
- C. Best fit
- D. First fit

41. A _____ is a portion of a process that can run independently.

- A. subprocess
- B. program
- C. Mini-process
- D. thread

42. Which of following statements about the memory hierarchy is false?

- A. Some medium-speed medium price main memory
- B. Small amount of fast expensive memory - cache
- C. Gigabytes of slow cheap disk storage

D. None of the other choices

43. 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?

A. 12345

B. 1234

C. 123

D. 123456

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

A. Set the time-of-day clock

B. All of the other choices

C. Disable all interrupts

D. Change the memory map

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

A. i-node

B. Contiguous Allocation

C. File Allocation Table

D. Linked List Allocation

46. 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?

A. 512B page

B. 2-KB page

C. 1-KB page

D. 4-KB page

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

A. Caching a device control register would be disastrous

B. Device drivers must be written using assembly language

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

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

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

A. 100

B. 80

C. 60

D. 20

49. Which of the following is specified to indicate the directory where the file is located?

A. Sub-directory

B. Path name

C. Root directory

D. Extension

50. 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

B. 60

C. None of the others

D. 58

51. An arrival message causes the system to create a new thread to handle this message. This new thread is call ____ .

A Activator

B. Pop-up

C. Upcall

D. Distributed

52. 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?

A. 1-KB page

B. 512B page

C. 4-KB page

D. 2-KB page

53. The methods determine where page is on the disk when it is paged out is

A. Paging to a static swap area

B. Backing up pages dynamically

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

D. None of the other choices

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

A. Spool everything

B. Request all resources initially

C. Order resources numerically

D. Take resources away

55. 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:

- A. P1, P3
- B. P2, P3
- C. P1, P4
- D. P1, P2

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

- A. exit; ExitProcess
- B. ExitProcess; terminate
- C. terminate; ExitProcess
- D. ExitProcess, exit

Test

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

- A. Programmed I/O
- B. Interrupt-driven I/O
- C. Direct Memory Access (DMA)
- D. None of the other choices

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

- A. The larger the block size is the faster the data rate is
- B. The larger the block size is the lower the data rate is
- C. The larger the block size is lesser the disk space is
- D. None of the other choices

Q3: A well-known Embedded operating system is:

- A. TinyOS
- B. QNX and VxWork
- C. Symbian OS and Palm OS
- D. 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.

- A. 10,8 minutes
- B. 12,8 minutes
- C. 16,8 minutes
- D. 54 minutes

Q5: 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	266	280	0	0		
1	160	265	0	1		
2	110	270	1	0		
3	120	285	1	1		

Which page will Second Chance replace?

- A. 0
- B. 1
- C. 2
- D. 3

Q6: What is incorrect about contiguous allocation of files?

- A. It is simple to implement
- B. It leads to excellent read performance
- C. It does not cause disk fragmentation
- D. It is widely used on CD-ROMs

Q7: Which of a system call is to allow the system to specify from where to take the data in file?

- A. OPEN
- B. SEEK
- C. CREATE
- D. LINK

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

- A. An interrupt is a hardware-generated change of control flow within the system
- B. An interrupt handler deals with the cause of the interrupt
- C. A trap instruction is a software-generated interrupt
- D. None of the other choices

Q9: Which deadlock condition does "Take resources away" attack?

A. Mutual exclusion

B. Hold and wait

C. No preemption

D. Circular-wait condition

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

A. Maintaining the time of day

B. Accounting CPU usage

C. Handling the alarm system call made by user processes

D. All of the other choices

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

A. Process Management

B. Time Management

C. Space Management

D. 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:

A. Lands

B. Valleys

C. Hills

D. Lakes

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

A. 2

B. 3

C. 4

D. 5

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

A. Current allocation matrix

B. Request matrix

C. Existing resource vector

D. Available resource vector

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

A. In the low-level MMU handler

B. In the page fault handler that is part of the kernel

C. In the external pager running in user space

D. All of the other choices

Q16: 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.

A. D6

B. B3

C. C5

D. None of the others

Q17: 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?

Select one:

A. 2-KB page

B. 1-KB page

C. 4-KB page

D. 512B page

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

A. Stream devices

B. Block devices

C. Character devices

D. None of the other choices

Q19: In terms of storage utilization the best method of Dynamic Storage Allocation is:

A. Next fit

B. First fit

C. Best fit

D. Worst fit

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

A. ISA (Industry Standard Architecture)

B. PCI (Peripheral Component Interconnect)

C. USB (Universal Serial BUS)

D. IDE (Integrated Drive Electronic)

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

A. UNIX

B. Windows XP

C. Mac OS

D. MS-DOS

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

A. PSW

B. None of the other choices

C. PSW and Contents of processor registers

D. PSW and PC

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

A. Symbolic links need not space to store the path name

B. Symbolic links can only point to files on the same machines

C. Symbolic links can point to files in the network

D. None of the other choices

Q24: What is asynchronous transfer in principles of I/O software?

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

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

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

D. None of the other choices

Q25: What is true about preemptable resources?

A. Will cause the process to fail if taken away

B. Can be taken away from a process with no ill effects

C. Can share among processes

D. None of the other choices

Q26: What is not correct about system calls?

A. A system call allows a user process to assess and execute operating system functions inside the kernel.

B. User programs use system calls to invoke operating system services

C. In terms of performance, using system calls is better than using procedure calls

D. Every system call involves overhead due to context switch

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

A. LIFO

B. LRU

C. NRU

D. FIFO

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

A. Instruction Register (IR)

B. Program Counter (PC)

C. Program Status Word (PSW)

D. All of the other choices

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

A. CPU utilization

B. Burst time

C. Throughput

D. 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

A. procedures

B. protocols

C. policies

D. rules

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

A. Process creation

B. Process execution

C. Page fault time

D. Process termination time

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

A. No two processes simultaneously in critical region

B. No assumptions made about speeds or numbers of CPUs

C. No process running outside its critical region may block another process

D. No process must wait forever to enter its critical region

E. All of the other choices

Q34: Which of the following environments preemption is essential?

A. Batch

B. Interactive

C. Real time

D. None of the other choices

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

A. Message passing

B. Monitors

C. Peterson's Solution

D. All of the other choices

Q36: Which of the following is true about Atomic action on semaphores?

A. Checking the value

B. Changing the value

C. Possibly going to sleep

D. All of the other choices

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

A. Mutual-exclusion condition

B. Circular-wait condition

C. Hold and wait condition

D. Preemption condition

Q38: A directory in UNIX/Linux consists of:

A. I-node number and file name

B. File name, file size, location of the file on disk

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

D. 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:

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

- B. Only programs in kernel can access to I/O devices
- C. Both programs in user space and kernel can access to I/O devices
- D. None of the other choices

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

A. Squares

B. Circular

C. Ellipse

D. Rectangle

Q41: A simplest way to break a deadlock is to

A preempt a resource

B. Rollback

C. kills one of the processes

D. locks one of the processes

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

A. Configuration and customization settings are checked.

B. The BIOS is activated by powering on the CPU.

C. The antivirus program checks all files for viruses

D. The operating system is loaded into RAM.

Q43: What is the correct approach with the "Mutual Exclusion condition" to prevent Deadlock?

A Order resources numerically

B. Request all resources initially

C. Spool everything

D. Take resources away

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

A. System initialization

B. Execution of a process creation system call

C. User request to create a new process

D. Initiation of a batch job

Q45: _____ 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.

A. APPEND

B. UPDATE

C. REWRITE

D. MODIFY

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

A. Each entry of a TLB contains the information about one page, including the virtual page number and the corresponding page frame

B. A TLB is sometimes known as an associative memory

C. A TLB miss implies a disk operation will follow

D. None of the other choices

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

A. Process code

B. File handles

C. Process data

D. 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 usec all-in to service. How many percent of the CPU does the interrupt overhead cost?

A. 4% of the CPU

B. 93% of the CPU

C. 7% of the CPU

D. 96% of the CPU

Q49: File Structure can be:

A. Byte sequence

B. Record sequence

C. Tree

D. All of the other choices

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

A. Running -> Blocked (waiting)

B. Running -> ready

C. Blocked (waiting) -> ready

D. Ready -> running

1) What is the main characteristic of real-time operating system?

- A. Multiple CPU
- B. Time-sharing
- C. Time is key parameter
- D. Many I/O devices

2) 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

3) 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

4) 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

- A. Prioritization
- B. Round-Robin
- C. LIFO
- D. All of the other choices

5) Failure to lock database records before updating them may result in a _____ between process

- A. Struggle
- B. Race
- C. Deadlock
- D. Livelock

6) 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

7) When there is an excessive amount of page swapping between main memory and secondary operation becomes inefficient, which is called_____.

A. excessive demand paging

B. hot swapping

C thrashing

D. Over swapping

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

A. 1 KB

B. 2 KB

C. 4 KB

D. 8 KB

9) The methods determine where page is on the disk when it is paged out is

A. Paging to a static swap area

B. Backing up pages dynamically

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

D. None of the other choices

10) Which mechanism is described as “the device controller sneaks in and steals an occasional the CPU once in a while delaying it slightly”?

A. Interrupt stealing

B. Cycle sneaking

C Cycle stealing

D. All of the others

11) Multiprogramming increases processor efficiency by

A. Increasing processor speed

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

C Eliminating all idle processor cycles

D. All of the other choices

12) 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

A 7

B. 20

C. 22

D. 24

13) The general role of an operating system is to:

A. Act as an interface between various computers

B. Provide a set of services to system users

C. Manage files for application programs

D. None of the other choices

14) 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

- A. There is no deadlock
- B. Event 4 caused deadlock
- C. Event 5 caused deadlock
- D Event 6 caused deadlock**

15)_____ allocation allows files to use any storage space available on the disk.

- A. Contiguous storage
- B. Noncontiguous storage**
- C. Fragmented storage
- D. Add-on storage

16) The aspect of disk performance that represents the time it takes to position the head at the desired track is known as

- A. Seek time
- B. Rotational delay**
- C. Access time
- D. None of the other choices

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

- A. 1
- B. 2**
- C. 3
- D. 4
- E. 5

18) 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.

- A. 14 minutes
- B. 8 minutes**

- C. 6 minutes
- D. 18.8 minutes

19) 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?

- A. 4 KB page
- B. 2 KB page
- C. 1-KB page
- D. 5128 page

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

- A. 50%
- B. 75%
- C. 25% .
- D. 100%

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

- A. Device drivers must be written using assembly language
- B. Programs must use 2 instructions to test whether the device is ready
- C. There is special protection mechanism to keep user processes from performing I/O
- D. Caching a device control register would be disastrous

22) 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?

- A. 0
- B. 1
- C. 2
- D. 3

23) A simplest way to break a deadlock is to:

- A. Preempt a resource
- B. Rollback
- C. Kills one of the processes
- D. Locks one of the processes

24) 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?

- A. The event is release of a currently held resource
- B. The event is press some key on keyboard
- C. The event is some mouse click
- D. None of the other choices

25) In "No Memory Abstraction" the static relocation technique is _____

- A. When the program is loaded at address n, the constant n was added to every program address
- B. When the program is compiled, the address of program is added with the constant value where the program will be loaded
- C. After the program is loaded at address n, the constant n is stored at a particular register
- D. None of the other choices

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

- A. Convert serial bit stream to block of bytes
- B. Perform error correction as necessary
- C. Make available to main memory
- D. All of the other choices

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

- A. 17 minutes
- B. 18 minutes
- C. 18.8 minutes
- D. 20 minutes

28) Which of the following is not file structure?

- A. Byte sequence
- B. Record sequence
- C. Ring
- D. Tree

29) Which of the following is correct about Shortest Job First scheduling algorithm?

- A. Avoid Starvation
- B. Minimize average wasting time
- C. Avoid Starvation and Minimize average waiting time
- D. None of the other choices

30) Which of the following is not true about process hierarchy?

- A. A process creates child process. The child process can itself create more processes, forming a process hierarchy
- B. In Unix, a process and all its children and further descendants together form a process group
- C. Window has no concept of a process hierarchy
- D. A process may have more than one parent

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

- A. OPEN
- B. CLOSE
- C. CREATE
- D. RENAME

32) Increasing file system performance is implemented by _____

- A. Buffer cache
- B. Block Read Ahead
- C. Defragmenting Disks
- D. All of the other choices

33) A well-known Real-Time operating system is _____

- A. TinyOS
- B. MS DOS
- C. Personal Operating System
- D. None of the others

34) 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
- B. 60

C. 58

D. None of the others

35) Which of the following conditions that causes the processes to be terminated when the processes have a program bug?

A. Normal exit (voluntary)

B. Error exit (voluntary)

C. Fatal error (involuntary)

D. Killed by another process (involuntary)

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

A. 24 bits

B. 28 bits

C. 30 bits

D. 22 bits

37) 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

A. 5.5

B. 6.8

C. 9.0

D. 11.1

38) Which of the following is specified to indicate the directory where the file is located?

A. Extension

B. Path name

C. Root directory

D. Sub-directory

39) Which deadlock condition does "Spool everything" attack?

A. Mutual exclusion

B. Hold and wait

C. No preemption

D. Circular-wait condition

40) Which of the following environments preemption is essential?

A. Batch

B. Interactive

C. Real time

D. None of the other choices

41) Which of the following is not special file?

A. Character special file

- B. Stream special file
- C. Block special file
- D. None of the other choices

42) Which of these statements about the algorithm "Best fit" is true?

- A. Memory Manager scans along the list of segments until it finds a hole that is big enough.
- B. Memory Manager starting searching the list of segments from the place where it left off last time.
- C. Memory Manager searches the entire list of segments from beginning to end and take smallest hole that is adequate
- D. None of the other choices

43) One of the primary disadvantages of contiguous storage is that_____.

- A. It is hard to implement and manage
- B. It is difficult to find information in files
- C. File can't be expanded unless there is empty space available immediately following it
- D. It is an inefficient use of space

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

- A. TLB only maintains a subset of the entries stored in the full memory-based page table
- B. When there is a TLB miss the system needs to access the page table
- C. The use of TLB eliminates the need for keeping a page table in memory
- D. None of the other choices

45) 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:

- A. P1, P2
- B. P1, P3
- C. P3, P4
- D. P1, P4

46) Which is not a goal of a scheduling algorithm for real-time systems?

- A. Meeting deadlines.
- B. Predictably
- C. Fairness
- D. None of the other choices

47) Which of the following is not a operating mode of CPU

- A. User mode

B. Kernel mode

C. Management mode

D. None of the other choices

48) Which of the following operating systems is an example of monolithic system?

A. UNIX

B. Windows XP

C. Mac OS

D. MS-DOS

49) Which of special register in the CPU points to the top of the current stack in the memory?

A. TO GO

B. PC

C. PSW

D. SP

50) _____ 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

A. Buffering

B. Lagging

C. Spooling

D. Spoofing

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

A. dirt()

B. chdir()

C. changedir()

D. chmod()

2. The primary disadvantage of contiguous storage is that ____

A. it is difficult to find information in files

B. it is an efficient use of space

C. file can't be expanded unless there is empty space available immediately following

D. it is hard to implement and manage

3. Raid level 2 get redundancy by ____

A. distribution

B. strip

C. mirror

D. hamming code

4. When is the process transit the state from Ready to Running?

A. The awaited event of process occurs

B. The process is suspended by the scheduler

C. The process waits for some event to occur

D. The process is selected by the scheduler

5. Which one of the following is the deadlock avoidance algorithm?

A. Kam's algorithm

B. Elevator algorithm

C. Banker's algorithm

D. Round-robin algorithm

6. Choose the correct statement about User mode.

- A. Can execute any machine instruction.
- B. Protect the OS from errant users
- C. Can execute a subset of the machine instructions
- D. Can access and control all hardware computer components

7. Which of following events will change the state of an active process from Running to Blocked?

- A. The process is chosen by scheduler
- B. IO wait
- C. De-allocating all resources
- D. Time-out (time slice expired)

8. The entry of all the PCBs of the current processes is in

- A. Process unit
- B. Program counter
- C. Process register
- D. Process table

9. 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% 87%
- C. 98.84%
- D. 90%

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

- A. MS-DOS
- B. Distributed

C. Real time

D. Time sharing

11. ____ allows a resource to be held by a process as long as it is needed

A. Resource holding

B. Mutual exclusion

C. Circular wait

D. No preemption

12. As one of the virtual storage methods. virtual address space is divided into fixed-length areas. What is such a fixed-length area called?

A. Segment

B. Page

C. Frame

D. Sector

13. Which process state means a process is finished executing?

A. Terminate

B. Running

C. Execute

D. Complete

14. Assume the following events and actions take place. Which of 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.

(6) P3 releases the plotter R3.

- A. Event 4 caused deadlock.
- B. Event 6 caused deadlock
- C. Event 5 caused deadlock.
- D. There is no deadlock.

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

- A. Modified bit
- B. Reference bit
- C. Caching disable bit
- D. Protection bits

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

- A. Average CPU utilization: Average response time
- B. Average waiting time: Average turnaround time
- C. CPU utilization: Response time
- D. Waiting time: Turnaround time

17. 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?

- A. 20MB 18MB 9MB
- B. 18MB 10MB 9MB
- C. 12MB 10MB 9MB
- D. 20MB 18MB 10MB

18. PCB (Process Control Block) does contain the information about ____ of each process:

- A. All of others.
- B. File management
- C. Process management

D. Memory management

19. Which is the name of the sensor operating system?

A. TinyOS

B. SLinux

C. Linux

D. TOS

20. Which using clock replacement policy, a page with a reference bit of ____ is replaced.

A. None of others

B. 0

C. 1

D. -1

21. 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.

A. 7

B. 8

C. 9

D. 6

22. In the Transition States, processes that are in new State can transit to:

A. Running, Blocked

B. Ready, Blocked, Terminated.

C. Ready, Running

D. Running, Blocked.

23. In the directed graph used to mode deadlock, ____ represents deadlock.

- A. any path
- B. a dashed arrow
- C. a solid arrow
- D. a cycle

24. Which one is the key concept in the design of I/O software of OS?

- A. It should interact with the device drives and makes hardware alive.
- B. It should be device dependent
- C. It should support special devices in advance.
- D. It should be device independent

25. A well-known Embedded operating system is:

- A. QNX and VxWork
- B. TinyOS
- C. Symbian OS and Palm OS
- D. Windows 11

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 ____

- A 6
- B. 8
- C. 4
- D. 10

27. Which statement is true about Thread?

- A. A lightweight process where the context switching is high
- B. A lightweight process where the context switching is low
- C. None of others
- D. Used to speed up paging

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

- A. Programmed I/O
- B. Direct Memory Access
- C. Interrupt-Driven I/O
- D. Sequential access

29. Which statement is true about classification of a process based on its behavior?

- A. A I/O-bound process spent most of its time for computing
- B. A compute-bound process spent most of its time for IO processing
- C. A compute-bound process spent most of its time for computing
- D. A compute-bound process sometimes spent most of its time for IO waiting

30. What will happen if a non-recursive mutex is locked more than once?

- A Starvation
- B. Aging
- C. Deadlock
- D. Signaling

31. What is a "stripping" in RAID?

- A. Get undressed
- B. Distributing data over multiple drives
- C. Take away possessions from someone
- D. Take away possessions from user process

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

- A. Page
- B. Segment

C. Frame

D. Sector

33. 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

34. Which of the following statements about Random Access memory (RAM) is correct?

A Stores all the files on the computer

B. Is volatile

C. Is typically faster than cache memory

D. Can only be read sequentially

35. Many computer users and some operating systems call subdirectories as ____

A. files

B. folders

C databases

D. volumes

36. In the real time operating system__

A. a task must be serviced by its deadline period

B. all processes have the same priority

C. kernel is not required

D. process scheduling can be done only once

37. With respect to methods to solve deadlocks, _____ (choose the best option)

A. Only one process is allowed to access a file at a time.

B. Preemptable resources can be resolved deadlocks by reallocating resources from one process to another.

C. Only one process is allowed to use CPU at a time.

D. Only one process is allowed to access network interface card at a time.

38. Which RAID level duplicates all the disks?

A. 1

B. 3

C. 5

D. 2

39. What is true about preemptable resources?

A. Can share among processes

B. Will cause the process to fail if taken away

C. Can be taken away from a process with no ill effects

D. None of the others

40. What are the design issues for paging system?

(1) Load Control

(2) Page Size

(3) Shared Pages

(4) Page fault handling

(5) Shared Libraries

(6) 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)

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

- A. Request and all required resources be allocated before execution
- B. Never request a resource after releasing any resource
- C. Release all resources before requesting a new resource
- D. Number the resources uniquely and never request a lower numbered resource than the last one requested.

42. Which of the following provides time period for the context switch?

- A. Timer
- B. Time slice
- C. Clock
- D. Counter

43. K có

44. CPU scheduling is the basic of ____ operating system.

- A. real time
- B. multiprogramming
- C. batch
- D. monoprogramming

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

- A. device configurator
- B. device driver
- C. translator
- D. communication utility

46. Which of the following is correct about the advantages of layered system?

- A. Easier to extend and Easier to debug from lower to upper layer
- B. Simple and high performance
- C. Easier to debug from lower to upper layer
- D. Easier to extend

47. Which is not one of the goals of the operating system?

- A. Compile program language
- B. Execute user programs
- C. Controls and coordinates the use of hardware
- D. Make the hardware efficiently and convenient to use

48. Which of the following is the appropriate purpose of defragmentation of hard disks?

- A. To access disk files faster and more efficiently
- B. To clean up temporary and junk files
- C. To delete IBG and increase capacity
- D. To protect disk drives from physical failures

49. Page hit occurs when ____

- A. a requested page is in memory
- B. a requested page is in system
- C. an exception is thrown
- D. a requested page is in CPU

50. Four batch jobs P1 through P4 arrive at a computer center at almost the same time. They have estimated running times of 10, 75 and 4 minutes. For SJF CPU scheduling algorithm, determine the mean process waiting time, ignore process switching overhead

- A. 10
- B. 725
- C 18.75
- D. 13.75

1. Which of the following environments preemption is essential?
 - A. Batch
 - B. Interactive
 - C. Real time
 - D. 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
3. Failure to lock database records before updating them may result in a — between processes.
 - A.Struggle
 - B.Race
 - D. Deadlock
 - C. Livelock
4. Which of the following statements is incorrect about Translation Look-aside Buffer (TLB)?
 - A. A TLB is sometimes known as an associative memory
 - B. Each entry of a TLB contains the information about one page, including the virtual page or corresponding page frame.
 - C. A TLB miss implies a disk operation will follow
 - D. None of the other choices
5. In terms of storage utilization the best method of Dynamic Storage Allocation is:
 - A. Next fit
 - B. First fit
 - C. Best fit
 - D. Worst fit
6. ____ allocation allows files to use any storage space available on the disk.
 - A. Contiguous storage

B. Noncontiguous storage

C. Fragmented storage

D. 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_____

A. thread_create

B. thread_exit

C. thread_wait

D. thread_yield

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

A. Mutual-exclusion condition

B. Circular-wait condition

C. Hold and wait condition

D. Preemption condition

9. Assume that four jobs A-D require the CPU cycles listed below. Using the Shortest Job First _____ job is run first.

A. A

B. B

C. C

D. D

10. Assume that process A-D make up the set of runnable processes on memory as
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

A. D6

B. B3

C. C5

D. None of the others

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

A. Hard real-time system

B. Soft real-time system

C. Middle real-time system

D. None of the other choices

12. Which of the following statements is not true about separating I/O and memory space?

A. Device drivers must be written using assembly language

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

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

D. Caching a device control register would be disastrous

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

A. Create, manipulate and delete File/Directory

B. Mapping files onto secondary storage

C. File backup on stable (nonvolatile) storage media.

D. Allocate and deallocate memory space as needed

14. ___ are special files with listings of filenames and their attributes.

A. Databases

B. Directories

C. Programs

D. Data files

15. Which of the following operating systems has the concept of a process hierarchy?

A. Win32

B. MS-DOS

C. Unix

D. CP/M

16. 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.

A. 10,8 minutes

B. 12,8 minutes

Next

C. 16,8 minutes

D. 54 minutes

17. 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	260	0	0	
1	160	266	0	1	
2	110	270	1	0	
3	120	285	1	1	

Which page will NRU replace?

- A. 0
- B. 1
- C. 2
- D. 3

18.What is the main characteristic of a real-time operating system?

- A. Multiple CPU
- B. Time-sharing
- C. Time is key parameter
- D. Many I/O devices

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

- A. Data rate
- B. Data representation
- C. Error conditions
- D. All of the other choices

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

- A. TinyOS
- B. MS-DOS
- C. Symbian OS and Palm OS
- D. e-COS

21.Which of the following is not a special file?

- A. Character special file
- B. Stream special file
- C. Block special file
- D. None of the other choices

22. The general role of an operating system is to:

- A. Act as an interface between various computers
- B. Provide a set of services to system users

C. Manage files for application programs

D. None of the other choices

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

A. OPEN

B. CLOSE

C. SEEK

D. RENAME

24. The actual location in main memory is called a(n):

A. Relative address

B. Logical address

C. Absolute address

D. 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?

A. Instruction Register (IR)

B. Program Counter (PC)

C. Program Status Word (PSW)

D. None of the other choices

26. 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

27. Which deadlock condition does "Spool everything" attack?

A. Mutual exclusion

B. Hold and wait

C. No preemption

D. Circular-wait condition

28. 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

29. 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

30. How many level of scheduling are used in computer

A. 1

B. 2

C. 3

D. 4

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

A. 14 bits

B. 15 bits

C. 16 bits

D. 17 bits

32. When selecting the proper time quantum it should be long enough to allow___run to completion

A. 20

B. 60

C. 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

B. 60

C. 58

D. None of the others

34. Which are allocation methods of disk blocks for files?

A. Contiguous allocation

B. Linked allocation

C. Indexed allocation

D. All of the other choices

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. 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.

A. 6 minutes

B. 12.8 minutes

C. 18.8 minutes

Next

D. 16.8 minutes

36. What is not the way to recover from a deadlock:

A. Preempt a resource

B. Rollback

C. Killing processes

D. Locks one of the processes

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

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

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

C. Requires a disk map in memory

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

38. 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: 0 1 2 3

Job: A B C D

CPU cycle: 8 4 9 5

A. 7

B. 20

C. 22

D. 24

39. Which is not a goal of a scheduling algorithm for real-time systems?

A. Meeting deadlines

B. Predictability

C. Fairness

D. None of the other choices

40. Which one cannot be able to solve the race condition?

A. TSL

B. Shared memory

C. Semaphore

D. Monitor

41. Of the three components of access time in a disk_____is the longest.

A. Seek time

B. Search time

C. Transfer time

D. Delay time

42. 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
P2	00001	02031
P3	21000	02110
P4	01112	11021

E=(24144)

A=(01021)

Deadlocked processes are:

- A. P1, P2
- B. P1, P3
- C. P3, P4
- D. P1, P4

43. 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

44. 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?

- A. Running -> Blocked (waiting)
- B. Running->ready
- C. Blocked (waiting) -> ready
- D. Ready-> running

45. Which of the following is true about the data rate for disk management?

- A. The larger the block size is the faster the data rate is
- B. The larger the block size is the lower the data rate is
- C. The larger the block size is lesser the disk space is
- D. None of the other choices

46. Which of the following is not file structure?

- A. Byte sequence
- B. Record sequence
- C. Ring
- D. Tree

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

- A. Memory Manager scans along the list of segments until it finds a hole that is big enough.
- B. Memory Manager starting searching the list of segments from the place where it left off last time.
- C. Memory Manager searches the entire list of segments from beginning to end and take smallest hole that is adequate.

D. None of the other choices

48. The Joliet Extensions provide

A. Long file name supported Unicode character

B. Directory nesting deeper than 8 levels

C. Directory names with extensions

D. All of the other choices

49. A(n)___ is provided to make system calls from some programming languages

A. procedure library

B. operator

C. pointer

D. None of the other choices

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

A. 1 KB

B. 2 KB

C. 4 KB

D. 8 KB

51. DMA operations require the following information from the processor

A. Address of I/O device

B. Starting memory location to read from and write to

C. Number of words to be read or written

D. All of the other choices

52. How many ways is Thread implemented?

A. 1

B. 2

C. 3

D. None of the other choices

53. Assume the following events and actions take place. The following statement,___ is true. Event 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.

A. There is no deadlock

B. Event 4 caused deadlock

C. Event 5 caused a deadlock.

D. Event 6 caused a deadlock.

54. 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

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

A. Normal exit (voluntary)

B. Error exit (voluntary)

C. Fatal error (involuntary)

D. Killed by another process (involuntary)

56. Which of the following is correct about the advantages of layered system?

A. Easier to extend

B. Easier to debug from lower to upper layer

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

D. 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

58. 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 2nd-level page table fields, and an offset. How large are the pages, and how many are there in the address space?

A. 4-KB page

B. 2-KB page

C. 1-KB page

D. 512B page

59. What is a "stripping" in RAID?

A. Distributing data over multiple drives

B. Take away possessions from someone

C. Get undressed

D. All of the other choices

60. Which of the following instructions should be allowed in user mode?

A. Disable all interrupts

B. Read the time-of-day clock

C. Set the time-of-day clock

D. Change the memory map