| قائمة الاسئلة |
|---|
| 202502261600_2_[CSY]_[Operating System]_[د. غراب موسى] |

1) Which one is the Computer system components:
1) - a. Operating system
2) - b. Application programs
3) - c. Users
4) + d. a, b and c are correct

2) Operating System characteristic:
1) - a. control program
2) - b. resource allocator
3) - c. program that manages a computer's hardware
4) + d. a, b and c are correct

3) An amount of time a process has been waiting in the ready queue called
1) - a. Average time
2) + b. Waiting time
3) - c. Running time
4) - d. a, b and c are not correct

4) The OS can be defined as ………..
1) - a. a control program
2) - b. a resource allocator
3) - c. program that manages a computer's hardware
4) + d. a, b and c are correct

5) Which one is a User interface.
1) - a. Command-Line (CLI)
2) - b. Graphics User Interface (GUI)
3) - c. Batch
4) + d. a, b and c are correct

6) The job scheduling led to the concept known as the ___
1) + Multiprogramming
2) - Job programming
3) - Programming
4) - Threading

7) In the following diagrams:
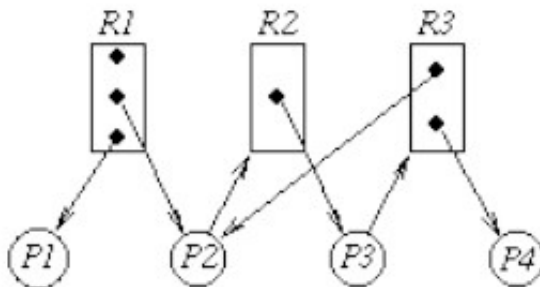
1) - a. There is deadlock start from P1
2) - b. There is deadlock in P1-R2-P2-R3
3) - c. There is no deadlock
4) + d. a, b and c are not correct

8) Round robin is a
1) - Kind of magnetic drum
2) - Memory allocation policy
3) + Process scheduling policy
4) - Process synchronization policy

9) which one is the type of System Calls:
1) - a. create file
2) - b. read file
3) - c. write file
4) + d. a, b and c are correct

10) FIFO scheduling is
1) - Fair-share scheduling
2) - Deadline scheduling
3) + Non-preemptive scheduling
4) - Preemptive scheduling

11) Which one is not as a process State
1) + Communicate
2) - terminated
3) - ready
4) - waiting

12) Which one is not in Process Control Block (PCB)
1) - Program counter
2) + bootstrap program
3) - I/O status information
4) - CPU registers

13) Consider the following set of processes with their Burst time and arrival time (table 1)

Table 1

	Arrival Time	Burst Time
P1	0	6
P2	2	8
P3	4	4
P4	10	3

. The Gantt charts for the (SJF) algorithm is:
1) - a. P3-P2-P4-P1
2) - b. P1-P2-P3-P4
3) - c. P4-P3-P2-P1
4) + d. a, b and c are not correct

14) Consider the following set of processes with their Burst time (table 2)

Table 2

Process	Burst Time
P_1	6
P_2	8
P_3	7
P_4	3

. From the table (2) the Gantt charts for the (FCFS) algorithm

1) - a. P3-P2-P4-P1
2) - b. P1-P2-P4-P3
3) - c. P4-P3-P2-P1
4) + d. a, b and c are not correct

15) Consider the following set of processes with their Burst time (table 2)

Table 2

Process	Burst Time
P_1	6
P_2	8
P_3	7
P_4	3

. From the table (2) the average waiting time for the (SJF) is:

1) - 6.5
2) - 7.5
3) + 7
4) - all are false

16) Consider the following set of processes with their Burst time (table 2)

Table 2

Process	Burst Time
P_1	6
P_2	8
P_3	7
P_4	3

. From the table (2) the average waiting time for the (FCFS) is:

1)   +   10.25
2)   -   10.5
3)   -   10
4)   -   all are false

17) The state in which the process is waiting to be assigned to a processor is called

1)   -   a. waiting
2)   +   b. ready
3)   -   c. terminated
4)   -   d. a, b and c are not correct

18) The information associated with each process is stored in

1)   -   a. Hard Disk
2)   -   b. CPU
3)   +   c. PCB
4)   -   d. a, b and c are not correct

19) The operation when CPU switches to another process is called ………….

1)   -   a. System call
2)   -   b. Multiprocessing
3)   +   c. context switch
4)   -   d. a, b and c are not correct

20) Waiting time is :

1)   -   the total time in the blocked and waiting queue
2)   -   the total time from the completion till the submission of a process
3)   +   the total time spent in the ready queue
4)   -   the total time spent in the running queue

21) Which of the following condition is required for deadlock to be possible?
1) - a. mutual exclusion
2) - b. Circular wait
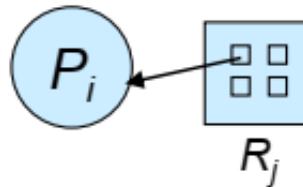3) - c. Hold and wait
4) + d. a, b and c are correct

22) The _____ swaps processes in and out of the memory.
1) - CPU manager
2) + memory manager
3) - user
4) - CPU

23) Scheduling leads to :
1) + a. increase CPU utilization
2) - b. decrease CPU utilization
3) - c. keep the CPU more idle
4) - d. a, b and c are not correct

24)

in Resource-Allocation Graph the Pi process

1) - a. Pi requests instance of Rj
2) + b. Pi is holding an instance of Rj
3) - c. Pi sends instance to Rj
4) - d. all the process are false

25) The following function is used to create a new process in Unix
1) - a. wait()
2) - b. exec ()
3) + c. fork()
4) - d. None of the above are true

26) Which one of the following is the deadlock avoidance algorithm?
1) - a. round-robin algorithm
2) + b. banker's algorithm
3) - c. elevator algorithm
4) - d. karn's algorithm

27) Threading Models
1) - a. One-to-One
2) - b. Many-to-One
3) - c. Many-to-Many
4) + d. all the above are correct.

28) The Advantages of Multiprocessors system :
1) - a. Increased reliability
2) - b. Increased throughput
3) - c. Economy of scale
4) + d. all a, b and c are correct

29) A process said to be in _____ state if it was waiting for an event that will never occur.
1) - Safe

2)   +   Deadlock
3)   -   Starvation
4)   -   waiting

30)   Starvation :
1)   -   a. as time progresses increase the priority of the process
2)   -   b. is priority scheduling where priority is the inverse of predicted next CPU burst time
3)   +   c. low priority processes may never execute
4)   -   d. a, b and c are not correct

31)   what is an operating system?
1)   -   type of computer hardware
2)   +   a program that acts as an intermediary between a user and computer hardware
3)   -   a software application for creating documents
4)   -   an online service for storing data

32)   "The one program running at all times on the computer" is the: ....
1)   -   application
2)   -   software
3)   +   kernel
4)   -   antivirus

33)   What are system programs?
1)   +   Programs that ship with the operating system but are not part of the kernel
2)   -   All programs not associated with the operating system
3)   -   Software frameworks providing additional services to developers
4)   -   The one program running at all times on the computer

34)   How does the operating system manage each device controller type?
1)   -   Through direct user input
2)   +   Using a device driver
3)   -   Via a network connection
4)   -   Through the CPU only

35)   What is the difference between preemptive and nonpreemptive I/O ?
1)   -   Preemptive I/O allows simultaneous processing of I/O requests, nonpreemptive does not
2)   -   Nonpreemptive I/O allows the user program to continue without waiting for I/O completion
3)   +   Preemptive I/O returns control to the user program without waiting for I/O completion, nonpreemptive I/O waits for completion
4)   -   There is no difference mentioned

36)   Device controller informs CPU that it has finished its operation by causing ....
1)   -   bus
2)   +   an interrupt
3)   -   device driver
4)   -   I/O devices

37)   What is the primary distinction between a program and a process?
1)   -   A program is active, while a process is passive
2)   +   A program is passive, while a process is active
3)   -   Both are active entities
4)   -   Both are passive entities

38)   In the abstract view of computer components, which of the following components interacts directly with the computer hardware?
1)   -   User
2)   -   Application programs
3)   +   Operating system

4)   -   None of the above

39)   What should the OS do for each type of error detected?
1)   -   Ignore the error if it's minor
2)   +   Take the appropriate action to ensure correct and consistent computing
3)   -   Log the error and continue running
4)   -   Restart the system

40)   What is the purpose of logging in an operating system?
1)   -   To control user access to the system
2)   +   To keep track of which users use how much and what kinds of computer resources
3)   -   To develop user interfaces
4)   -   To enhance system security

41)   What is one of the key differences between protection and security in a computer system?
1)   +   Protection is about controlling access to resources, while security involves defending against external threats
2)   -   Security is about controlling access to resources, while protection involves defending against external threats
3)   -   Protection and security are the same concepts
4)   -   Protection deals with user authentication only, while security deals with resource control

42)   What is a system call?
1)   -   A method to start a computer
2)   +   A programming interface to the services provided by the OS
3)   -   A type of network protocol
4)   -   A way to format hard drives

43)   What are the two types of goals in designing operating systems?
1)   -   Financial goals and marketing goals
2)   +   User goals and system goals
3)   -   Design goals and implementation goals
4)   -   Hardware goals and software goals

44)   What is a benefit of using a higher-level language for OS implementation?
1)   -   It is always faster
2)   +   It is easier to port to other hardware
3)   -   It requires less memory
4)   -   It is more secure

45)   What does a microkernel approach do?
1)   -   Moves as much as possible from user space into the kernel
2)   +   Moves as much as possible from the kernel into user space
3)   -   Merges user space and kernel space
4)   -   Eliminates user space entirely

46)   How does the modular approach compare to the layered approach?
1)   -   It is less flexible
2)   +   It is similar but more flexible
3)   -   It is more rigid
4)   -   It is completely different and incompatible

47)   The operating system is divided into a number of layers (levels). What is the bottom layer (layer 0)?
1)   -   User interface
2)   -   Application programs
3)   +   Hardware
4)   -   Network protocols

48)   What is the difference between a program and a process?

1)   +   A program is an executable file stored on disk, while a process is a program in execution
2)   -   A program is always active, while a process is stored on disk
3)   -   A program can run in parallel, while a process cannot
4)   -   A program is a task, while a process is a thread

49) What does the "Running" state of a process signify?
1)   -   The process is being created
2)   -   The process is waiting for some event to occur
3)   +   Instructions are being executed
4)   -   The process has finished execution

50) How many processes can be running on any processor at any instant of time?
1)   +   Only one
2)   -   Two
3)   -   Many
4)   -   None

51) What is each entry in the Process Table called?
1)   -   Program Counter
2)   -   CPU Register
3)   +   Process Control Block (PCB)
4)   -   Memory Block

52) Which type of process spends more time doing computations with few very long CPU intervals?
1)   -   I/O-bound process
2)   +   CPU-bound process
3)   -   Very-bound process
4)   -   Time-bound process

53) What is the goal of multiprogramming in process scheduling?
1)   -   To run multiple processes in sequence
2)   +   To have some process running at all times to maximize CPU utilization
3)   -   To limit the number of processes in the system
4)   -   To prioritize I/O-bound processes

54) What is the device queue?
1)   -   A set of all processes in the system
2)   -   A set of processes ready to execute
3)   +   A set of processes waiting for an I/O device
4)   -   A set of processes in the job queue

55) What does the short-term scheduler do?
1)   -   Manages I/O devices
2)   +   Selects which process from the ready queue should be executed next
3)   -   Swaps processes in and out of memory
4)   -   Selects processes to be brought from mass storage into RAM

56) What happens if all processes are I/O-bound according to the long-term scheduler?
1)   -   The CPU utilization is maximized
2)   +   The ready queue will almost always be empty, minimizing CPU utilization
3)   -   The I/O devices will be underutilized
4)   -   The memory usage is optimized

57) How can computation speedup be achieved in cooperating processes?
1)   -   By executing tasks sequentially
2)   +   By breaking a task into subtasks and executing them in parallel
3)   -   By reducing the number of processes
4)   -   By using a single CPU for all tasks

58) What characteristic do most modern applications have?
1) - Single-threaded
2) + Multithreaded
3) - Low-memory usage
4) - High CPU usage

59) What are the benefits of using threads in an application?
1) - Decreased efficiency
2) - Increased memory usage
3) - Reduced CPU usage
4) + Increased efficiency

60) What is one benefit of using threads in terms of responsiveness?
1) - Threads reduce memory usage
2) + Threads may allow continued execution if part of a process is blocked
3) - Threads increase the CPU speed
4) - Threads eliminate the need for process synchronization

61) How do threads facilitate resource sharing?
1) - Threads use more memory than processes
2) - Threads do not share any resources
3) + Threads share resources of a process, making it easier than shared memory or message passing
4) - Threads use dedicated resources separate from processes

62) how is process creation described compared to thread creation?
1) - Both process and thread creation are heavy-weight
2) - Both process and thread creation are light-weight
3) + Process creation is heavy-weight, while thread creation is light-weight
4) - Process creation is light-weight, while thread creation is heavy-weight

63) Why are threads considered economical?
1) + They are cheaper than process creation and have lower overhead than context switching
2) - They are more expensive than processes
3) - They have higher overhead than context switching
4) - They do not use CPU resources

64) What is one of the challenges faced by programmers when working with multicore or multiprocessor systems?
1) - Increasing CPU speed
2) + Dividing activities
3) - Reducing memory usage
4) - Simplifying user interfaces

65) In the context of implicit threading, where does the biggest burden fall?
1) - On the operating system
2) - On the hardware
3) - On the programmers
4) + On the runtime library and the compiler

66) What is necessary to achieve maximum CPU utilization?
1) - Single-threaded processes
2) + Multiprogramming
3) - Low-memory usage
4) - High CPU usage

67) What is a CPU burst?
1) - The amount of time a process waits for input
2) - The amount of time a process is stored in memory

3)   +   The amount of time a process uses the CPU until it starts waiting for some input or is interrupted

4)   -   The amount of time a process uses I/O resources

68)   What happens during an I/O burst?

     1)   -   The process performs computations

     2)   +   The process waits for input or output operations to complete

     3)   -   The process is terminated

     4)   -   The process is stored in memory

69)   In the context of preemptive scheduling, what does "preempted" mean?

     1)   -   The process continues to run uninterrupted

     2)   -   The process is terminated

     3)   +   The process is temporarily halted to allow another process to run

     4)   -   The process is moved to a different queue

70)   In which situations is there no choice in terms of scheduling?

     1)   -   When a process switches from running to ready state

     2)   -   When a process switches from waiting to ready

     3)   -   When a process switches from waiting state to running

     4)   +   When a process is terminated or switches to waiting state

71)   What can preemptive scheduling result in when data are shared among several processes?

     1)   -   Deadlocks

     2)   +   Race conditions

     3)   -   Increased CPU utilization

     4)   -   Decreased memory usage

72)   In the context of the dispatcher, what does "switching context" involve?

     1)   -   Changing the priority of a process

     2)   +   Saving the state of the currently running process and restoring the state of the next process

     3)   -   Allocating CPU time to the next process

     4)   -   Terminating the currently running process

73)   What is the main difference between preemptive and non-preemptive scheduling in the context of the short-term scheduler?

     1)   +   Preemptive scheduling allows a process to be forcibly removed from the CPU, whereas non-preemptive scheduling does not.

     2)   -   Non-preemptive scheduling allows a process to be forcibly removed from the CPU, whereas preemptive scheduling does not.

     3)   -   Preemptive scheduling only occurs at system startup.

     4)   -   Non-preemptive scheduling is used only for I/O-bound processes.

74)   What is the primary distinction between kernel mode and user mode in an operating system?

     1)   -   Kernel mode is for user-level applications, and user mode is for system-level operations.

     2)   +   Kernel mode has unrestricted access to hardware, while user mode has restricted access.

     3)   -   Kernel mode operates in a virtual environment, while user mode operates directly on hardware.

     4)   -   There is no distinction between kernel mode and user mode.

75)   What does a state-transition diagram represent in an operating system?

     1)   -   The scheduling of threads

     2)   +   The lifecycle of a process

     3)   -   The allocation of memory

     4)   -   The structure of the file system

76)   Each process utilizes a resource as .

     1)   +   request ,use , release

     2)   -   use, release, request

     3)   -   release, use, request

4)   -   request, release,use

77)   Which of the following conditions must hold simultaneously for a deadlock to occur?
1)   -   Mutual Exclusion
2)   -   Hold and Wait
3)   -   No Preemption
4)   +   All

78)   What does the "Hold and Wait" condition mean in the context of deadlocks?
1)   -   only one thread at a time can use a resource
2)   +   a thread holding at least one resource is waiting to acquire additional resources held by other threads
3)   -   a resource can be released only voluntarily by the thread holding it, after that thread has completed its task
4)   -   None of them

79)   If a graph contains a cycle and all resources have only one instance then
1)   -   no deadlock
2)   -   possibility deadlock
3)   +   deadlock
4)   -   all false

80)   deadlock prevention technique ensures that. If a process that is holding some resources requests another resource that cannot be immediately allocated to it, then all resources currently being held are released
1)   -   Mutual exclusion
2)   -   Hold and wait
3)   +   No preemption
4)   -   Circular wait

81)   In deadlock prevention: Invalidating the .... condition is most common.
1)   -   mutual exclusion
2)   -   hold and wait
3)   -   no preemption
4)   +   circular wait

82)   Simplest and most useful model requires that each thread declare the maximum number of resources of each type that it may need
1)   -   deadlock prevention
2)   +   deadlock avoidance
3)   -   deadlock detection
4)   -   deadlock ignore

83)   If a system is in unsafe state then...
1)   -   no deadlock
2)   -   deadlock
3)   +   possibility deadlock
4)   -   All of them are True

84)   ....edge T→R indicated that process T may request resource R; represented by a dashed line
1)   +   claim
2)   -   request
3)   -   assignment
4)   -   None of them

85)   ....Allow system to enter deadlock state
1)   -   deadlock prevention
2)   -   deadlock avoidance
3)   +   deadlock detection
4)   -   all of them